Munsys 14.3

TELECOMS USER MANUAL

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Munsys® Telecoms User Manual

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Chapter 1
Introducing the Munsys Telecoms User's Guide

Introduction

Munsys Telecoms is used to capture and maintain telecoms networks. It is a user-friendly, easy to use geographic information management tool, which does not require GIS expertise to capture and manipulate data.

Munsys Telecoms is installed as an addition to the Munsys Spatial Data Manager application, which forms part of the Munsys product range.

About this guide

The *Munsys Telecoms User's Guide* enables users to easily find their way around Munsys Telecoms, and provides a conceptual overview of the functionality used in Munsys Telecoms. For the purpose of this guide, we assume that you are familiar with:

- The business rules of the application
- Autodesk Map
- Common GIS terminology

What's in this guide

The *Munsys Telecoms User's Guide* consists of the following chapters:

- Chapter 1 – Introducing the Munsys Telecoms User's Guide, gives an overview of this guide and provides information about additional reading material.
- Chapter 2 – Getting acquainted with Munsys Telecoms, gives an overview of Munsys Telecoms.
- Chapter 3 – Querying telecoms data from the database, describes how to query Telecoms data from the database.
- Chapter 4 – Capturing telecoms data, shows the user how to capture a telecoms network, verify the integrity of the network and post the data to the database.
- Chapter 5 – Maintaining telecoms data, describes how to maintain existing telecoms data.

Additional reading material

Before you start using this guide, we suggest that you first read the

Munsys Applications Concepts User's Manual, which contains the following information:

- the generic functionality of the various Munsys applications
- the generic query functionality that is used to query spatial data from the Oracle® database
- how to structure a query through query palette settings and GSC settings
- how to view spatial data
- how to work with Munsys Objects
- extras such as annotation, reporting and legend options.

Conversions in this guide

The following table lists the typographical conventions used in this manual.

Text element	Example
Keys you press on the keyboard	CTRL, ENTER, DEL
Screen buttons	Click **Close**.
Folder paths	C:\Program Files\Open Spatial
Menu paths	choose **Query** > **Clear Basemap**.
Hypertext links to more information	www.openspatial.com
Text displayed/typed on the command line	Munsys Telecoms
Dialog box/screen names	The **Telecoms Settings** dialog box
Application functions	The **Integrity Check** function

Figure 1 Munsys typographical conventions

Finding the information you need

To get help on

- general issues, select Help from the Munsys Management Console menu bar.
- an operation in progress, click the Help button on the dialog box.

the latest support options, visit http://www.openspatial.com

Chapter 2
Getting acquainted with Munsys Telecoms

About Munsys Telecoms

Munsys Telecoms caters for the easy capture and maintenance of telecoms networks. The capture functionality supports two categories of telecoms network elements, namely the **backbone network** and the **local network**. The local network is divided into a **primary** and a **secondary** side.

The telecoms network is complete once the all the nodes, links, cables and service connections have been captured. Network connectivity and integrity rules are applied as the links and cables are attached to the nodes. These rules prevent incorrect connectivity between nodes, links and cables across different networks.

Munsys Telecoms allows data retrieval from the database by telecoms category, as well as by geographic location or user-specific criteria.

Launching Munsys and Munsys Telecoms

To launch Munsys, do one of the following:

1 Choose **Start > Programs > Open Spatial > Munsys 14.3 > Munsys Applications 14.3**

2 or Double-click the **Munsys Applications 14.3** icon on the Windows desktop.

Connecting to the Oracle database

Munsys uses Oracle as its data store. The advantage of using the Oracle Spatial or locator technology is that spatial and attribute data are captured and managed in a single database. This reduces processing overheads and eliminates the complexity of coordinating and synchronizing different sets of data.

The Munsys Applications support multiple Logons which permit users to logon to different databases such as Training, Test or Production databases by selecting a Logon Profile from a drop-down list. When the Connect function is selected, the logon credentials (excluding the password) are pre-populated based on last successful database connection.

The Logon Profile details are customizable and stored in the Current User's Registry Keys. By default, three Logon Profiles are defined, namely Logon1, Logon2 and Logon3. The Logon Profile descriptions can be changed from the default description to be more meaningful one by simply clicking in the text box next to the Logon Profile and overwriting the default value.

Important You have to be connected to the Oracle database before you can start working with Munsys Telecoms. If you try to launch any application without being connected to the database, you will be prompted to connect to the database first.

To connect to the Oracle database

1 Do one of the following:

- Choose **File** > **Database** > **Connect...**
- Click the **Connect to Database** button on the Munsys standard toolbar.
- On the command line, type **MUNCONNECT**, and then press ENTER.

The Connect to Database dialog box is displayed.

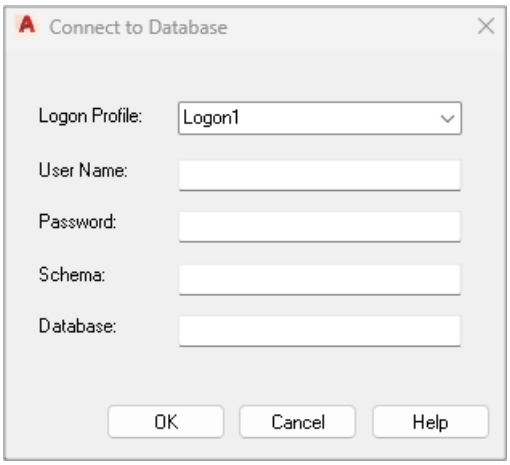

Figure 1 The Connect to Database dialog box

2 In the **Logon Profile** box, select a profile from the drop-down list.

Note The Logon Profile can be changed to a more meaningful description by clicking in the Logon Profile text box and overwriting the default description with a value not exceeding 25 characters, for example: TRAINING, TEST, STAGING or PRODUCTION.

3 In the **User Name** field, enter your user name.

4 In the **Password** field, enter your password.

5 In the **Schema** field, enter the schema name.

6 In the **Database** field, enter the database name.

7 Click **OK**.

On successful connection to the database, the last Logon Profile, User Name, Schema and Database details are saved in your Current User's Registry Key where they are used to pre-populate the Connect to Database dialog-box on next logon. Your password is never saved, and you will always be prompted to enter your Password.

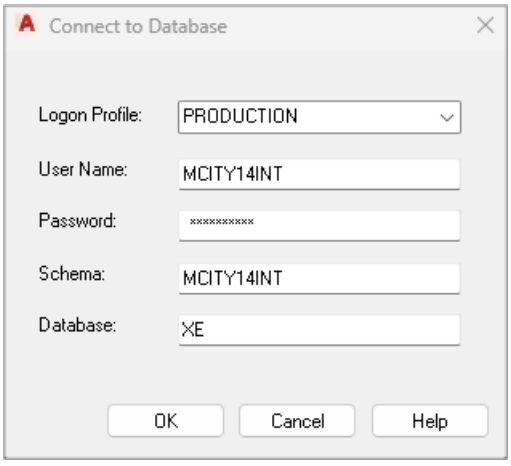

Figure 2 The Connect to Database dialog box with Logon Profile

Note The last used Logon Profile details, and the various Logon descriptions are stored in the registry key **Computer\HKEY_CURRENT_USER\Software\Open Spatial\Munsys 14.3\Applications\Logons**, whilst the registry key **Computer\HKEY_CURRENT_USER\Software\Open Spatial\Munsys 14.3\Applications\Logons\[Logon1]** saves the individual User Name, Schema and Environment Name details per Logon Profile.

The administrator assigns you user rights to log on to the database, and will inform you what your user name, password, schema name, and database are. A successful connection to the database activates the appropriate functions on the menu bar and toolbars.

To launch Munsys Telecoms

When you launch Munsys for the first time, the configured base map automatically loads and the Munsys Cadastral functions are displayed on the menus and toolbars by default if Munsys Cadastral has been installed. When you launch Munsys Telecoms, the Munsys Telecoms functions replace the Munsys Cadastral functions on the menu bar and toolbars.

1 To launch Munsys Telecoms, do the following:

- Choose **File** > **Munsys Applications**.
- Click the **Munsys Applications** button on the Munsys standard toolbar.

The Available Applications dialog box is displayed.

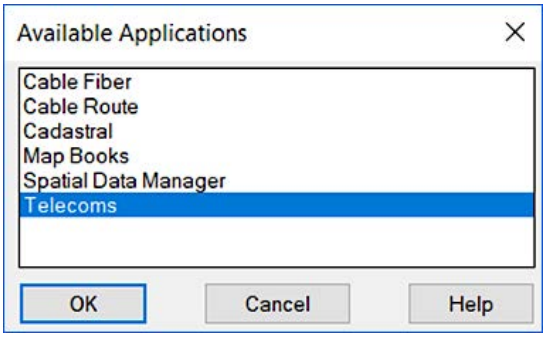

Figure 3 The Available Applications dialog box

2 From the list of available applications, select **Telecoms** and then click **OK**.

The **Munsys Telecoms** functions are displayed on the menus and toolbars.

The Munsys Telecoms interface

The Munsys Telecoms interface consists of the following:

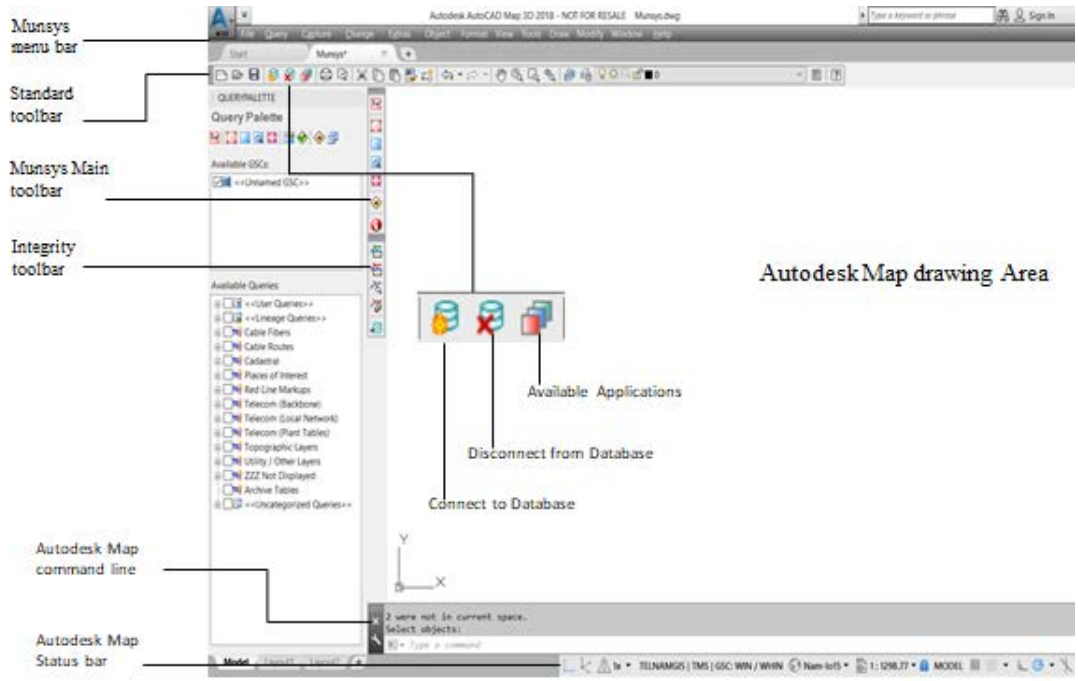

Figure 4 The Munsys Telecoms interface

- **Munsys menu bar** – contains the Munsys and Autodesk Map menus. Munsys menus are defined by a menu file, which automatically loads when the Munsys application is launched.
- **Standard toolbar** – contains frequently used Autodesk Map buttons and standard Microsoft® buttons, as well as Munsys buttons for connecting to/disconnecting from the database and launching the various Munsys applications.
- **Autodesk Map drawing area** – this area is used to display Munsys data that is retrieved from the database, and Autodesk Map drawings.
- **Autodesk Map command line** – displays prompts and messages.
- **Autodesk Map status bar** – displays information/drawing aids.
- **Munsys main toolbar** – contains frequently used Munsys functions.
- **Munsys Integrity toolbar** – contains the **Integrity Check** and **Post to Database** functions.

Use this button	When you want to...
	...validate object integrity.
	...validate network integrity
	...browse integrity markers.
	...erase integrity markers.
	...post data to the database.

Figure 5 The Munsys Integrity toolbar buttons

About Telecom objects

Nodes, links, cables, and service connections are the objects that are used to build a telecoms network. Additional telecoms objects include routes, telecoms sites and areas, symbols, notes and dimensions.

Cables

Cables are placed either overhead (OH) or underground (UG). With Munsys Telecoms, you can capture the following cables:

- Backbone copper cables
- Local Network cables

Service connections

Service connections connect land parcels to the rest of the telecoms network, and are captured either underground (UG) or overhead (OH).

Non-network objects

The following objects in the telecoms system do not form part of the network connectivity:

- **Telecoms sites** – may have a number of network components positioned geographically inside their boundaries, and are captured as polygons
- **Telecoms areas** – feed a particular geographical area, and are captured as polygons
- **Telecoms notes** – supply additional information on plans and drawings
- **Dimension arrows** – supply additional information in terms of the location of a telecoms object relative to a parcel boundary

Chapter 3
Querying telecoms data from the database

Introduction

This chapter describes how to query telecoms data of your choice from the database.

Telecoms nodes, links, cables and service connections are the objects that contribute to telecoms network. Additional telecoms objects include routes, sites, areas, symbols, notes, and dimensions.

Telecoms data is queried from the database by category, and according to the current GSC.

Munsys Telecoms caters for two telecoms categories: **backbone** and **local network**.

- The **backbone network** consists of the elements in the network that form part of the backbone of the network.
- In the **local network**, distribution lines are characterized by identification of physical lines, via physical wire connections or software connections. These include the entire network up to the service connections.

Should you need to query only a specific telecoms object type, the **Run Query** or **Query Palette** functions should be used to run the main system query of the specific object type. For more information about these functions, refer to the **Munsys Applications Concepts User Manual: Chapter 3: Querying spatial data in Munsys.**

Telecoms data that is queried includes the retrieval of the spatial and attribute data. To retrieve telecoms data from the database, you need the **MUNSYS_TMS_QUERY** role assigned by the database administrator. If you want to edit the objects, you need to have the **MUNSYS_TMS_EDIT** role assigned as well.

Querying telecoms data by category

This group of queries retrieves telecoms objects (nodes, links, cables, service connections, symbols, notes, routes, dimensions and dimension notes) from the database according to their category (**backbone** or **local network**). The telecoms objects are queried onto their respective layers.

To query all telecoms categories

- Choose **Query** > **Telecoms Category** > **All**.

The command line indicates how many telecoms objects from **all** the categories were retrieved from the database.

To query telecoms objects – backbone category

- Choose **Query** > **Telecoms Category** > **Backbone**.

The command line indicates how many telecoms objects in the **backbone** category were retrieved from the database.

To query telecoms objects – local network category

- Choose **Query** > **Telecoms Category** > **Local Network**.

The command line indicates how many telecoms objects in the **local network** category were retrieved from the database.

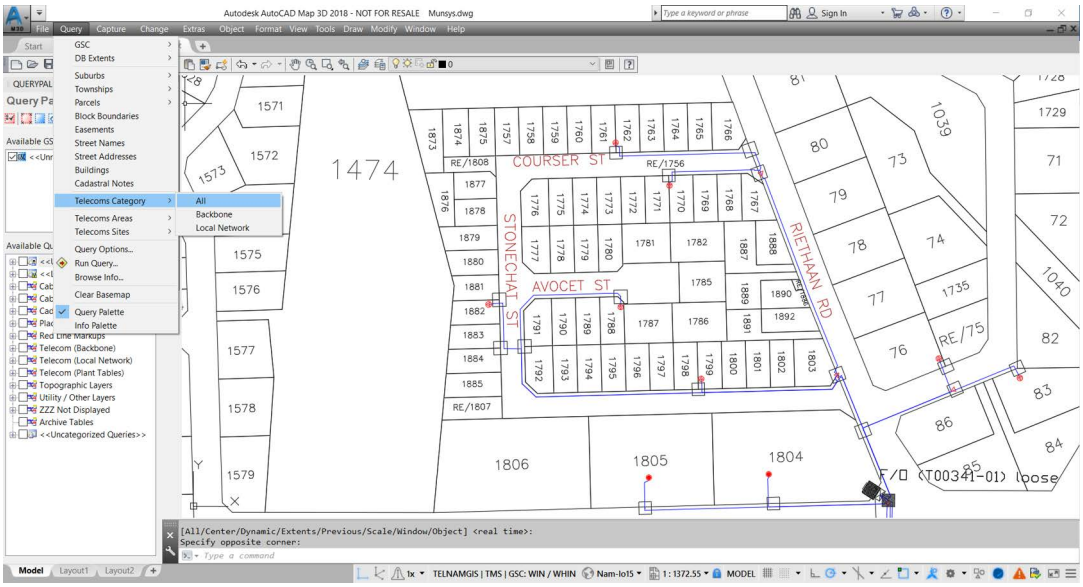

Figure 1 Query menu: Telecoms Category

Querying telecoms areas

Telecoms areas feed a particular geographical area. Telecoms areas are retrieved from the database by category, and according to the current GSC.

To query telecoms areas – all categories

- Choose **Query** > **Telecoms Areas** > **All**.

The command line indicates how many telecoms areas in **all** the categories were retrieved from the database.

To query telecoms areas – backbone category

- Choose **Query** > **Telecoms Area** > **Backbone**.

The command line indicates how many telecoms areas in the **backbone** category were retrieved from the database.

To query telecoms areas – local network category

- Choose **Query** > **Telecoms Area** > **Local Network**.

The command line indicates how many telecoms areas in the **local network** category were retrieved from the database.

To query telecoms areas – local network category

- Choose **Query** > **Telecoms Area** > **Attach Schematic**.

To attach a drawing file of the telecoms area outlining the schematic of the area.

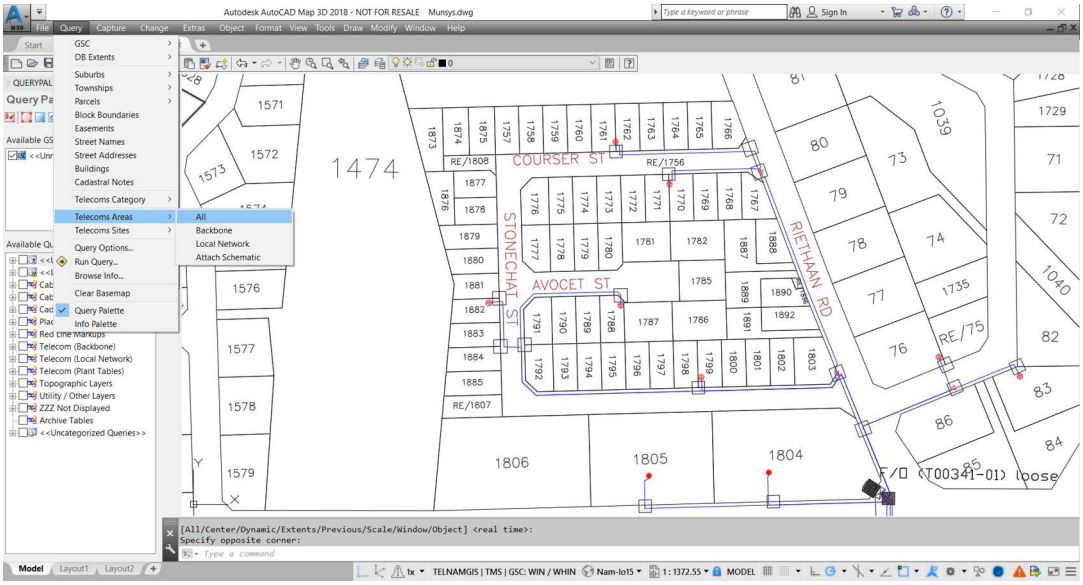

Figure 2 Query menu: Telecoms Areas

Query telecoms sites

Telecoms sites may have a number of network components positioned geographically inside its boundary. Telecoms sites are retrieved from the database by category, and according to the current GSC.

To query telecoms sites – all categories

- Choose Query > Telecoms Sites > All.

The command line indicates how many telecoms sites in all the categories were retrieved from the database.

To query telecoms sites – backbone

- Choose Query > Telecoms Area > Backbone.

The command line indicates how many telecoms sites in the backbone category were retrieved from the database.

To query telecoms sites – local network

- Choose Query > Telecoms Area > Local Network.

The command line indicates how many telecoms sites in the local network category were retrieved from the database.

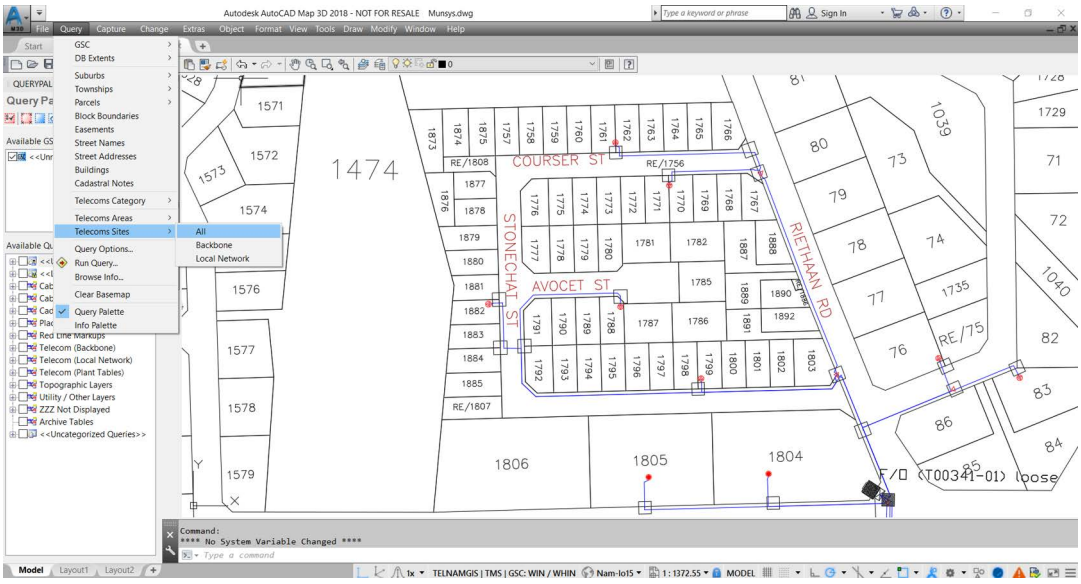

Figure 3 Query menu: Telecoms Sites

Chapter 4
Capturing telecoms data

Introduction

This chapter will show you how to capture a telecoms network and related telecoms data, verify the integrity of the objects that you have captured, and post the data to the database. You will also learn how to convert objects to telecoms objects.

When you start to capture a telecoms network, you will first need to query the cadastral data from the database to make certain that the objects locate geographically correct. Existing telecoms objects should also be queried to determine the relationship between existing and new objects. This will prevent data duplication.

When a telecoms network is captured, nodes are placed first. Next, links and/or cables are attached to the nodes. Service connections, which indicate the connection from the parcel to the rest of the telecoms network, are captured next.

Telecoms objects that do not influence network connectivity are captured next.

These include telecoms areas, site, notes, and dimensions.

Telecoms objects need to be verified against the applicable business rules before they are posted to the database.

Important Please consult the **HLSD_Telecom_ICMS_Integration_R02.pdf** document for information on how the node and cable capture has been modified to incorporate checks on the ICMS tables for valid Node IDs, Cable IDs, From Pair and To Pair ranges. This document details the exact capture methods.

About a telecoms network

A telecoms network can be divided into two network components: the **backbone** network and the **local network**. The backbone side includes all transmission and switching elements. The local network can be divided into a **primary** side and a **secondary** side.

The backbone side

The backbone side of the network provides connectivity from exchange to exchange and facilitates local access to all services. Services can vary from standard analog lines through to digital point to point (peer to peer) leased lines. The backbone includes various access network elements, as well as the long-distance connection mediums. The backbone ends, and the local network starts at the Main Distribution Frame (MDF).

The backbone consists of the following components:

- **Standard backbone elements** – main elements such as the switch and the Digital Line Unit (DLU).
- **Access network** – the access network provides the technology and actual ports through which customers are connected to the switches and the remainder of the backbone network. It consists of a variety of different types of communications technologies and high and low-speed carriers.
- **Management systems** – include the SCADA units.

Standard backbone elements

The following are general backbone elements:

- **Exchange** – usually refers to the building where one or more switches are housed. It can also refer to the area served by an exchange.
- **Exchange area** – exchange areas include all areas served by the switches associated with a specific exchange. Exchange areas are not mutually exclusive; they can overlap.
- **Switch** – refers to that component within the telecoms network that represents the start of the network. The terms *switch* and *exchange* are used interchangeably; however, the term *switch* is preferred for the node. The term *exchange area* is preferred for the area serviced by the switch, and a one to many relationship exists between the switch and the exchange area.
- **MDF** (Main Distribution Frame) – associated with the backbone, it allows the establishment of cross-connections. It is primarily an analog device.
- **SDE** (Small Digital Exchange) – a small digital exchange that includes the functionality of both a switch and a DLU.
- **DLU** (Digital Line Unit) – the DLU forms the feeder for the MDF and includes line management functionality.

High capacity carrier components

The following general nodes associated with most high capacity carriers:

- **DDF (Digital Distribution Frame)** – associated with the backbone network, it allows the establishment of cross-connections. It is similar to an MDF, except that it is a digital device on the access network side.
- **Satellite dish** – a dish pointed at a geostationary communications satellite.
- **Microwave dish** – a microwave dish points directly at another microwave dish over a long distance. This implies a direct line of sight.

Technology components

- **DIGICON** – data connection points for customer point-to-point connections (leased lines).

The local cable network

The local cable network is distinctly hierarchical, meaning that no looped connections may exist between cables. Typically, local network side elements are characterized by the number of twisted pair lines that each element can handle. The capacity and spare capacity of each element is of primary importance.

Primary side

The primary side of the network starts at the Main Distribution Frame (MDF).

This means that the MDF forms part of both the backbone and the local network.

- The primary side of the network includes the cable that starts from the MDF. The potential capacity of the MDF is flexible, meaning that it can grow as needed. The MDF is always inside an exchange area.
- One or more primary cables leading from the MDF may each end in a primary join. The capacity of the join may be larger than that of the incoming cable, but never smaller. The join's spare capacity is determined by the difference between the capacities of the incoming cable minus the sum of the cables leading off it. On the primary side, a join is always inside a chamber, usually a manhole. The join size is determined by the incoming cable.
- One or more primary cables leading from the join may each end in a Street Distribution Cabinet (SDC), which is the start of the secondary distribution network.
- Direct feed cables may lead from an MDF directly to a direct-feed DP, which will be identified as such through ICMS data.

Secondary side

The secondary side of the local network starts at the SDC. The following elements form part of the secondary distribution network:

- The first element in the secondary side of the local network is always a Street Distribution Cabinet (SDC). The capacity of the SDC may be larger than that of the incoming cable, but not smaller. The primary spare capacity of the SDC is determined by the incoming primary network cable. The secondary spare capacity of the SDC is determined by the outgoing secondary network cables.
- One or more secondary cables leading from the SDC may each end in a secondary join. The capacity of the join is usually determined by the feeder cable. The join's spare capacity is determined by the difference between the capacities of the incoming cable minus the sum of the cables leading off it. The secondary join is normally inside a chamber, usually a Join Pit. In some instances, a secondary feeder may lead from an SDC to a join in a stubby, where the feed may be split into three cables, each of which may lead to a stubby or other DP. Although inside a stubby, these are treated as secondary joins as well.
- Upon initial capture, the capacity of the cable is determined by the total number of pairs connected to the SDC minus the number of worker pairs.
- One or more secondary cables leading from the join may each end in a Distribution Point (DP). The capacity of the DP may be larger than that of the incoming cable, but never

smaller. The DP's spare capacity is determined from the ICMS system. Different types of DPs can be used; the type depending on how the DP is positioned and how cables are taken off the DP. If the DP is positioned on top of a pole from which aerial cables take distribution further, as in residential areas, the DP may have both drop wires and aerial cables leading from it. DP types are:

- Pole DP – usually on a pole feeding overhead distribution.
- Stubby DP – a DP positioned on the ground, often against a wall, from which various underground service connection cables (house feeder cables) feed directly to the end users.
- Building DP – building DPs include a variety of DPs, all of which are usually used to bring a number of lines to a building. These include the following types:
  - Indoor DP or Strip DP – usually inside larger buildings, used as main distribution point for businesses.
  - Outdoor DP – similar to an indoor DP, but on the outside of a building. It usually has extra structural protection against tampering and weather.
- Aerial DP – an aerial DP is positioned after a pole DP or another aerial DP in the secondary network. It is used to extend the DP into the residential area and does not play a real connectivity role. Drop wires essentially run from the DP to the houses, often assisted by an aerial DP. They are included as part of the network for practical purposes.

Important Although the above is the norm for local networks, it must be made clear that exceptions to the rule are also possible. The DP (any DP) may be linked directly to an MDF or a primary join, via primary cables. This is possible because the local network is ultimately a net-work of physical links.

Telecoms capture settings

Munsys Telecoms has its own default capture settings that are set by the database administrator in **Munsys Administrator**. You can change the current settings on the **Telecoms Settings** dialog box to speed up the capture process. Capture settings only apply to *new* telecoms objects, and if you change the default settings, the changes are only valid for the current session.

Settings are changed by highlighting the current value and then entering a new value, by selecting the new value from a drop-down list, or by selecting or clearing a check box.

Note Some settings may only be changed by the database administrator to enforce consistency and integrity on a higher level.

The following table shows the capture settings for Munsys Telecoms that may be changed on the Telecoms Settings dialog box:

Category	Description
Cables	Cable Bandwidth Capacity
	Cable Default Offset Distance
	Cable Info
	Cable Line Capacity
	Cable Material
	Conductor Type
Dimensions	Dimension Note Height
File	Drawing Directory
General	Database Extents Display Resolution
	Integrity Circle Size
	Tag Angle, Height, and Justification
	Telecoms Category
	Link Bandwidth Capacity
	Link Info
Notes	Note Tag Height
Service Connections	Service Connection Length
	Service Connection OH Type
	Service Connection UG Type

Category	Description
Symbols	Telecoms Symbol Scale
Telecoms Areas	Area Tag Height
Telecoms Sites	Site Tag Height

Figure 1 Munsys Telecoms default capture settings

To specify Telecoms capture settings

1 Choose **Capture** > **Telecoms Settings...**

The **Telecoms Settings** dialog box is displayed, showing the default telecoms capture settings.

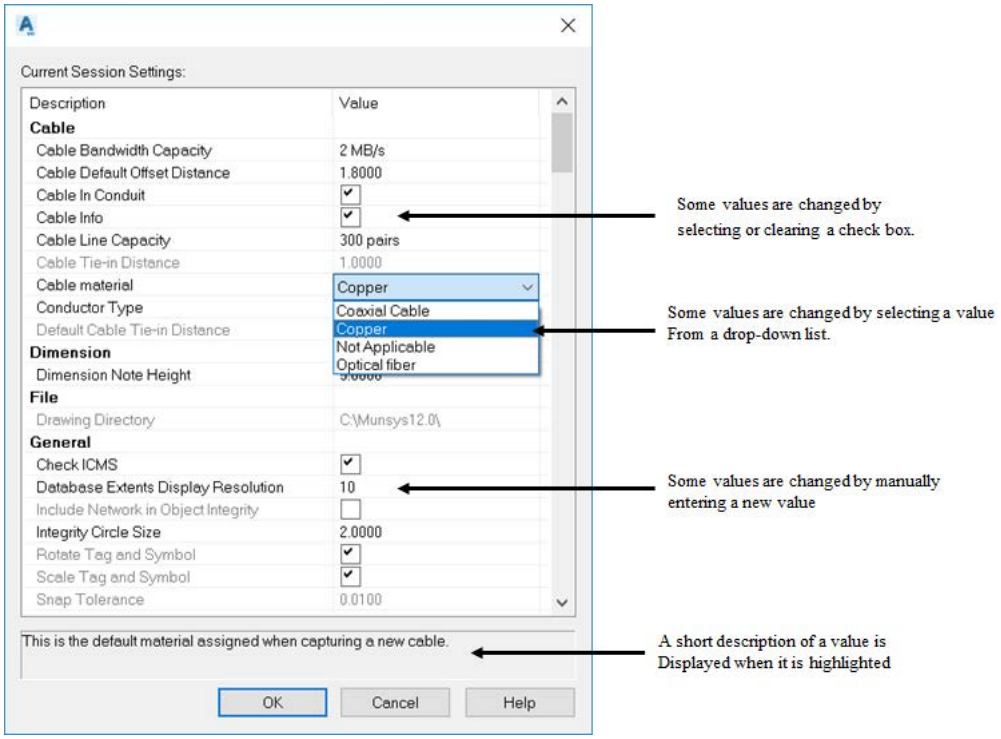

Figure 2 The Telecoms Settings dialog box

2 To change a value, do one of the following:

- Highlight the current value, and then enter a new value
- Highlight the current value, and then choose the new value from the drop-down list
- Select or clear the appropriate check box

3 Click **OK** to apply the new settings.

The settings will apply until you change them again, or until the current session is terminated, or until you switch to a different application.

Capturing telecoms nodes

As described earlier, telecoms nodes are captured first when the telecoms network is created. Nodes are captured on their appropriate layers, to be verified when the integrity check is run. With Munsys Telecoms, you can capture backbone nodes, carrier nodes and local network nodes.The following Node settings on the Telecoms Settings dialog box determine the procedure that is followed when nodes are placed:

- **Align nodes with cadastral** – determines whether or not a node is automatically aligned with cadastral boundaries when it is captured.
- **Automatic node placement** – determines whether nodes are placed automatically or not; when this setting is enabled, you will not be prompted for an insertion point.
- **Node descriptions** – prompts for a description when a node is captured.
- **Snap nodes** – determines whether a node is automatically snapped to cadastral boundaries when it is captured.

Placing telecoms nodes

The Place Node functions are used to place telecoms nodes (backbone, carrier and local network nodes) independently of any other nodes or connections that may already exist.

Munsys Telecoms caters for the capture of the following nodes:

Backbone Nodes

Symbols	Node
	Switch
	Small Digital Exchange (SDE)
	Distributed Line Unit (DLU)
	Main Distribution Frame (MDF)

Carrier Nodes

Symbols	Node
	Microwave Tower
	DIGICON Terminal

Figure 3 Carrier nodes

Local network nodes

Symbols	Node
	Primary Joint
	Street Distribution Cabinet (SDC)
	Secondary Join
	Distribution Point (DP)
	Distribution Point Stubby (DPS)
	Distribution Point Aerial (DPA)
	Distribution Point Building (DPB)
	Local Network Pole

Figure 4 Local network nodes

Placing telecoms cables

Munsys Telecoms caters for the capture of the following overhead (OH) and underground (UG) cables:

- Backbone copper cable (UG)
- Local network cable (OH and UG)

The following table shows the default capture rules for the various cable types:

Backbone side

Link	Start node	End node
UG backbone copper cable	DLU	DLU
	MDF	MDF
	Microwave Tower	Microwave Tower
	DIGICON Terminal	DIGICON Terminal

Figure 5 Telecoms Backbone cable capture rules

Local network side

Link	Start node	End node
UG local network cable	MDF	Primary Joint
	Primary Joint	SDC
	SDC	Secondary Joint
	Secondary Joint	DP
		Building DP
	DIGICON Terminal	
		Stubby DP
		DIGICON Terminal
OH local network cable	DP	DPA
	DPA	

Figure 6 Telecoms Local network cable capture rules

Note During capture, you will be prompted for cable information if the **Cable Info** option has been selected on the **Telecoms Settings** dialog box, as seen in the following example (**The Cable Info** option is selected by default).

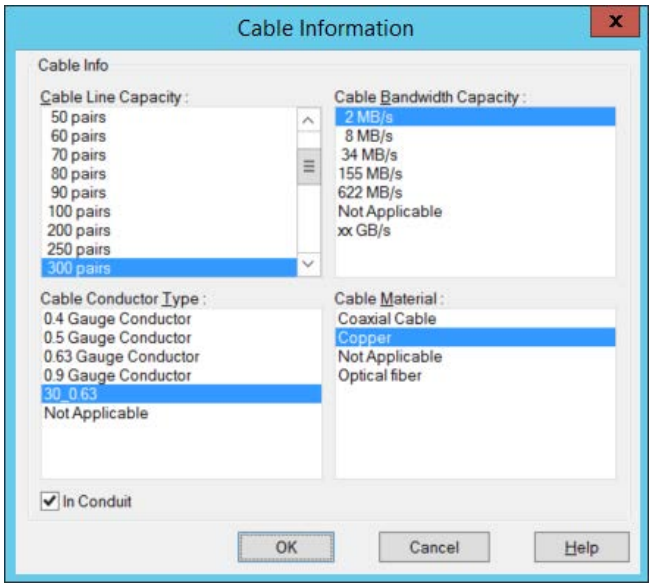

Figure 7 The Cable Information dialog box

Note If the Cable Info option has been selected on the Telecom Settings, then during capture the user will be prompted for the Planned Cable Information once selecting the intermediate cable routes for the new copper cable to be housed.

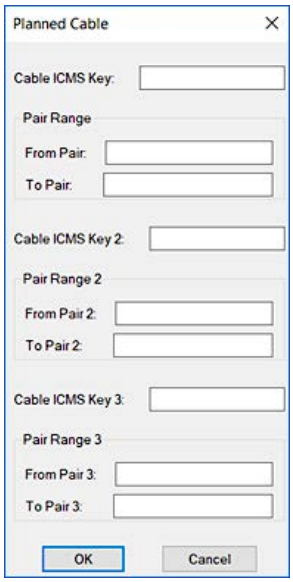

Figure 8 Planned Cable dialog box

Placing underground (UG) cables

Underground cables can be drawn freehand by selecting points in the drawing or by entering coordinates on the command line or placed at a specified offset distance from cadastral boundaries.

To place an offset UG cable

Using the default capture settings, cables are placed as follows:

1. Choose **Capture** > **Place Offset UG Cable** > **Cable Name**.
2. Select the start node for the cable.
3. Select the end node for the cable.

   The command line prompts you to specify points or to specify a segment from which to offset the cable.
4. To place a cable by specifying the cable routes it has to run within, do the following:
   - You will be prompted to select the cable routes for the cable to run in.
   - Once done selecting all cable routes you will be prompted if done selecting cable routes.
   - Click Yes.
   - The Planned Cable Information dialog box will appear and the necessary information will need to be filled in.

   When the cable information has been specified, the command line displays a message confirming that the cable was created successfully.

Placing overhead (OH) cables

Overhead cables are placed by selecting the start node and end node, and then selecting intermediate cable routes for the cable.

To place an OH cable

1. Choose **Capture** > **Place OH Cable** > **Cable Name**.
2. Select the start node for the cable.
3. Select the end node for the cable.

   The **Cable Information** dialog box is displayed.

4. In this dialog box, specify the values for the cable that you are capturing by selecting the following:
   - Cable Line Capacity
   - Cable Bandwidth Capacity
   - Cable Conductor Type
   - Cable Material
5. Click **OK** to apply the values.
6. Select the intermediate cable routes for the cable and then press ENTER.
7. Select Yes to confirm the intermediate cable routes have been selected.
8. The Planned Cable dialog box will be presented and the necessary information will have to be filled in.

   The cable is captured on its appropriate layer, to be verified when the integrity check is run.

Placing service connections

Service connections create connectivity between the telecoms network and land parcels. The service connection must extend a certain distance into the parcel.

With Munsys Telecoms, you can capture both underground (UG) and overhead (OH) service connections.

Service connections are captured with the type set to the default, or as specified in the **Telecoms Settings** dialog box. The service connection type can be changed using the Change SC Type function on the **Change** menu.

The following default capture rules apply to service connections:

Service connection type	Start node
Overhead (OH)	DP
	DPA
Underground (UG)	DPS

Figure 9 Placing Service Connections

Placing underground (UG) service connections

UG service connections can be placed at a specified **offset distance** from cadastral boundaries or drawn **freehand**.

To place an offset UG service connection

1 Choose **Capture** > **Place UG SC** > **Offset**.

2 Select the start node for the service connection.

The command line prompts you to specify points or to specify a segment from which to offset the service connection.

3 To place the service connection by specifying points, do the following:

- Specify the first point, and then specify next points for the service connection.
- Press **ENTER** when you have specified all the points.
- Specify a point on the side to offset the service connection.
- On the command line, specify a multiplication factor for the default offset distance, or press **ENTER** to accept the default offset distance.
- Next, select a point within the parcel where you want to place the service connection.

The command line displays a message confirming that the service connection was created successfully.

4 To place the service connection by specifying offset segments, do the following:

- On the command line, type **O**, and then press **ENTER**.

- Specify a segment to offset the service connection from.
- Specify a point on the side to offset the service connection.
- On the command line, specify a multiplication factor for the default offset distance, or press **ENTER** to accept the default offset distance.
- Continue selecting segments until all the required segments have been selected, and then press **ENTER**.
- Press **ENTER** to confirm the selection.
- Next, select a point within the parcel where you want to place the service connection.

The service connection is captured on its appropriate layer, to be verified when the integrity check is run.

To place a freehand UG service connection

1. Choose **Capture** > **Place UG SC** > **Freehand**.
2. Select the start node for the service connection.
3. Specify the first intermediate point for the service connection, and then specify the next points.
4. Press **ENTER** to confirm the selection.
5. Select a point in the parcel to place the service connection.

   The service connection is captured on its appropriate layer, to be verified when the integrity check is run.

Placing overhead (OH) service connections

OH service connections can be placed at a specified angle (45 or 90 degrees) to a land parcel, or drawn freehand.

To place a freehand OH service connection

1. Choose **Capture** > **Place OH SC** > **Freehand**.
2. Select the start node for the service connection.
3. Specify the first intermediate point for the service connection, and then specify next points.
4. Press **ENTER** to confirm the selection.
5. Select a point in the parcel to place the service connection.

   The service connection is captured on its appropriate layer, to be verified when the integrity check is run.

To place an OH service connection at 45 or 90 degrees

1. Do one of the following:
   - Choose **Capture** > **Place OH SC** > **45 Deg Direct**.
   - Choose **Capture** > **Place OH SC** > **90 Deg Direct**.
2. Do the following for both service connection types:
   - Select the start node for the service connection.
   - Rotate the mouse in a clockwise or counterclockwise direction, and then click to display the service connection vector at angles of 45 or 90 degrees.

   The service connection is captured on its appropriate layer, to be verified when the integrity check is run.

Capturing telecoms areas

Telecoms areas indicate an area that is associated with a particular node. Telecoms areas are captured as polygons. The telecoms area is captured by drawing an area boundary, and then placing a tag. The polygon builder uses the boundary lines and tag to create a area polygon.

Drawing a telecoms area boundary

A telecoms area boundary is drawn by selecting consecutive points to form a boundary.

To draw a telecoms area boundary

1. Choose **Capture** > **Telecoms Area** > **Draw Area Boundary**.
2. Specify the first polygon point.
3. Specify the next polygon points, and then press **ENTER**.
4. Press **ENTER** to close the polygon, or type **N** on the command line to specify more points.

   Munsys closes the polygon automatically by snapping to the first specified point.

Placing a telecoms area tag

A telecoms area tag consists of the supply node for the telecoms area. The insertion point for the tag must fall within the telecoms area boundary.

To place a telecoms area tag

1. Choose **Capture** > **Telecoms Area** > **Place Area Tag**.
2. Select the supply node for the telecoms area.
3. Specify the insertion point for the tag.
4. On the command line, specify the tag height, or press ENTER to accept the default height.
5. To specify the tag angle, do one of the following:
   - Indicate the tag angle with your mouse.
   - On the command line, type A to align the tag to an object, press ENTER, and then select the object to which you want to align the tag.

   The tag, consisting of the node ID of the supply node, is inserted as specified.

Generating telecoms area polygons

This function is used to generate a closed polygon from the lines and tag that were created for the telecoms area. The function verifies that the area polygon forms a closed area. The integrity check still needs to verify the standard business rules for telecoms before the area is posted to the database. Telecoms area polygons are generated on the **TELAREA_*Node Category*** layer. The category is adopted from the node type that was selected as the supply node.

To generate telecoms area polygons

1. Choose **Capture** > **Telecoms Area** > **Generate Area Polygons**.
2. Select all the lines for the telecoms area, and then press **ENTER**.
3. Select the telecoms area tag, and then press **ENTER**.

   The command line indicates that the polygon has been built successfully.

Capturing telecoms sites

A telecoms site may have a number of network components positioned geographically inside its boundary. No specific relationship exists between a particular node and the site. Telecoms sites are captured as polygons. The telecoms site is captured by drawing a site boundary, and then placing a tag. The polygon builder uses the boundary lines and tag to create a site polygon.

Drawing a telecoms site boundary

A telecoms site boundary is drawn by selecting consecutive points to form a boundary.

To draw a telecoms site boundary

1. Choose **Capture** > **Telecoms Site** > **Draw Site Boundary**.
2. Specify the first polygon point.
3. Specify the next polygon points, and then press **ENTER**.
4. Press **ENTER** to close the polygon, or type **N** on the command line to specify more points.

   Munsys closes the polygon automatically by snapping to the first specified point.

Placing a telecoms site tag

A telecoms site tag is placed within the boundaries of the site polygon. The polygon builder uses the lines and tag to build the site polygon.

To place a telecoms site tag

1. Choose **Capture** > **Telecoms Site** > **Place Site Tag**.
2. Specify the insertion point for the tag.
3. On the command line, specify the tag height, or press **ENTER** to accept the default height.
4. To specify the tag angle, do one of the following:
   - Indicate the tag angle with your mouse.
   - On the command line, type **A** to align the tag to an object, press **ENTER**, and then select the object to which you want to align the tag.
5. Type the tag value on the command line, and then press **ENTER**.

   The tag is inserted as specified.

Generating telecoms site polygons

This function is used to generate a closed polygon from the lines and tag that were created for the telecoms site. The function verifies that the site polygon forms a closed site. The integrity check still needs to verify the standard business rules for telecoms before the site is posted to the database. Telecoms site polygons are created on the **TELSITE_*CATEGORY*** layer.

To generate telecoms site polygons

1. Choose **Capture** > **Telecoms Site** > **Generate Site Polygons**.
2. Select all the lines for the telecoms site, and then press **ENTER**.
3. Select the telecoms site tag, and then press **ENTER**.

   The command line indicates that the polygon has been built successfully.

Set Available Services

This function is used to assign available services to one or more selected parcels.

To add available services

1 Choose **Capture** > **Set Available Services > Add Available Service.**

2 Select the parcel(s) to which you want to assign a service on.

The **Add Available Services** dialog box is displayed.

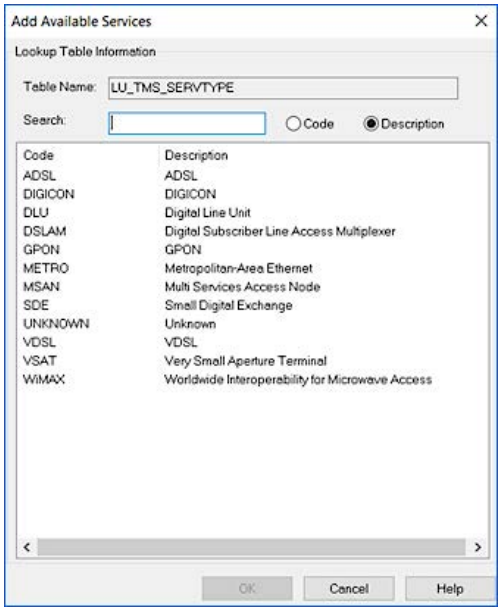

Figure 10 The Add Available Services dialog box

3 Select a service from the list, and then click **OK**.

The service is assigned to the parcel(s) that you selected.

To remove available services

1 Choose **Capture** > **Set Available Services > Remove Available Service.**

2 Select the parcel(s) to which you want to assign a service on.

The **Add Available Services** dialog box is displayed.

Placing telecoms symbols

This function is used to place telecoms symbols in the current drawing. Telecoms symbols represent additional annotation in the form of a symbol and do not form part of the telecoms network. Telecoms symbols can be placed anywhere without any restriction. Telecoms symbols are captured on the **TELSYM** layer.

Note The database administrator can add additional telecoms symbols to the lookup table**LU_TMS_TELSYM** as required. This table contains a number of default symbols but can becustomized.

To place telecoms symbols

1 Choose **Capture** > **Place Telecoms Symbol...**

The Telecoms Symbols dialog box is displayed, showing a list of available telecoms symbols.

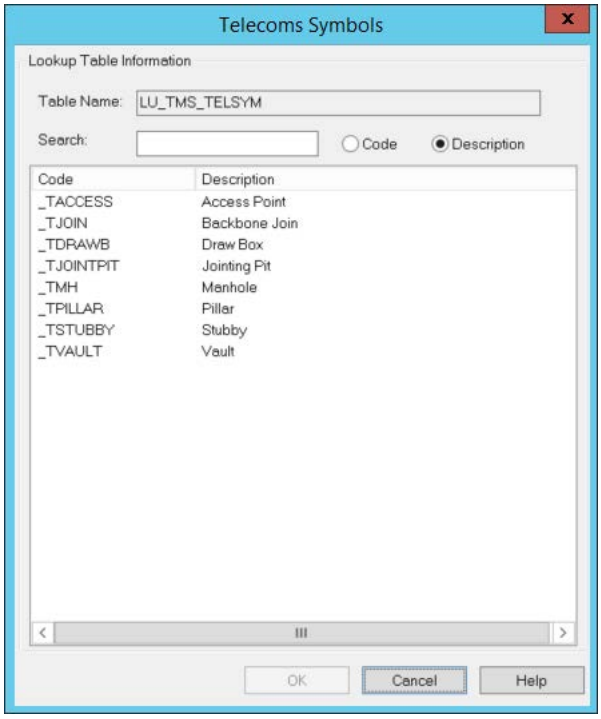

Figure 11 The Telecoms Symbols dialog box

2 From the list, select the symbol that you want to place, and then click **OK**.

3 Specify an insertion point for the symbol.

4 Specify a rotation angle for the symbol by doing one of the following:

- Enter the rotation angle on the command line, or press **ENTER** to accept the default angle of zero.
- Indicate the angle with your mouse pointer by picking two points in the drawing.

- On the command line, type **A** to align the symbol to an object, press **ENTER**, and then select the object to which you want to align the symbol.

The symbol is placed at the insertion point and angle that you specified.

5 Press **ENTER** or Spacebar to continue placing consecutive symbols of the same type, without having to select a symbol type from the list every time.

Placing Telecoms notes

For map production purposes, information about spatial objects can be added in the form of notes. A note may be added, for example, to label distinguishing landmarks.

To place a Telecoms note

1 Choose **Capture** > **Place Telecoms Note**.

2 Specify the insertion point for the note.

3 On the command line, specify the note height, or press **ENTER** to accept the default height.

4 To indicate the text angle, do one of the following:

- Indicate the text angle with your mouse.
- On the command line, type **A** to align the text to an object, press **ENTER**, and then select the object to which you want to align the text.

5 Type the note text on the command line, and then press **ENTER**.

The note is inserted as specified.

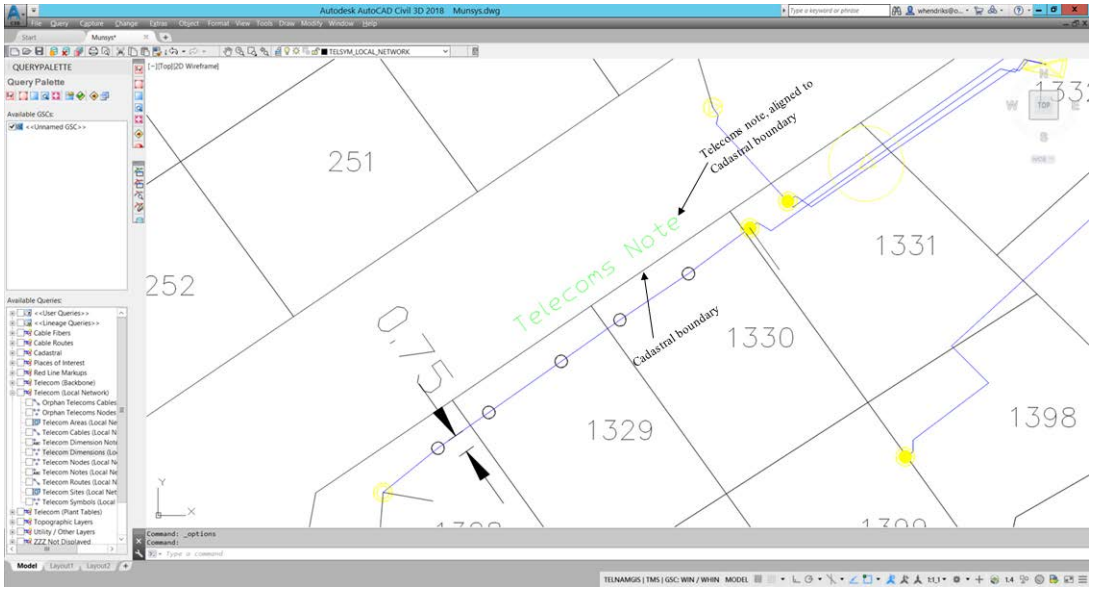

Figure 12 A telecoms note

Placing dimension arrows

Dimension arrows are used to indicate the offset distance of a telecoms cable from a parcel. (A map is a graphical representation of reality and it is therefore almost impossible to capture telecoms cables at the true offset distance from a parcel boundary.)

To place dimension arrows

1 Choose **Capture** > **Place Dimension Arrow**.

2 Select the first segment for dimension.

The dimension arrows will be placed perpendicular to this segment.

3 Select the second segment for dimension.

The dimension arrows are aligned to the point selected on this segment.

4 On the command line, enter the offset distance, or press **ENTER** to accept the default offset distance.

The dimension text is placed at the dimension arrows, indicating the distance between the two dimension lines.

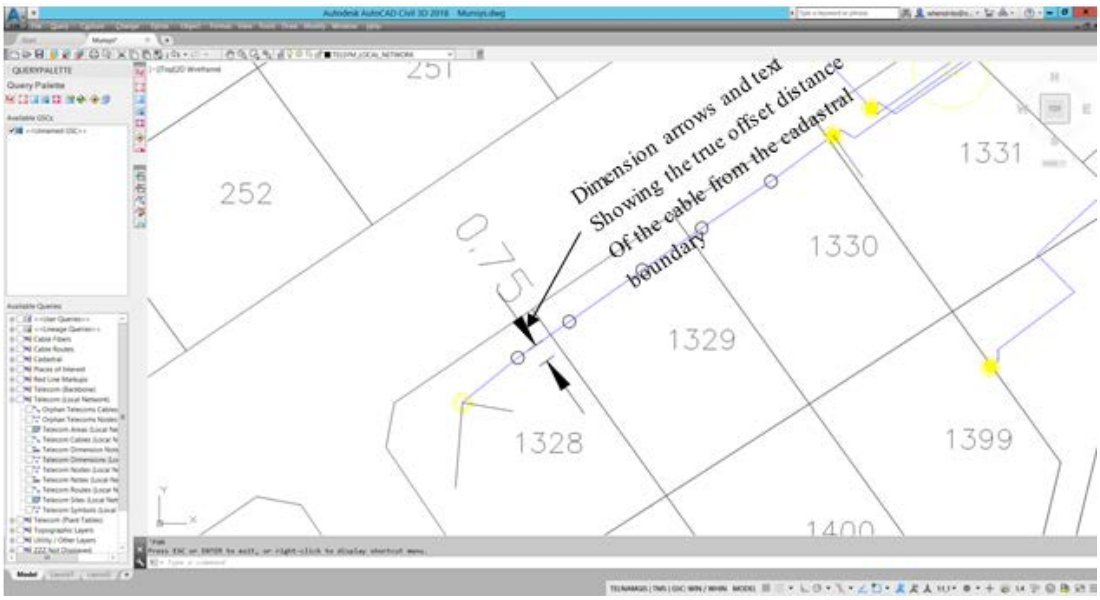

Figure 13 Dimension arrows

Validating telecoms integrity

The **Integrity Check** provides a set of rules to validate spatial objects. All new or modified telecoms objects have to be verified against integrity rules built into the application's capture and change routines before they can be posted to the database. New and changed objects contain an internal status that requires the validation process.

The **Integrity Check** is run from the **Capture** menu, or by clicking the appropriate button on the **Integrity** toolbar. The way in which the integrity check is executed depends on the preferences/options specified in the **Munsys Options** dialog box. The various options available on this dialog box are discussed in detail in the Munsys Concepts User's Manual: Chapter 4: Munsys Options.

When telecoms object integrity is validated, the following is verified:

Validation check/error condition	Description
Unlocked objects not rectified	Indicates that an object could have been rectified but, because it was unlocked, the integrity check failed to rectify the object and it was left as is.
Short spatial objects	Applies to any object with a length shorter than the Munsys Telecoms database tolerance setting.
Duplicate points in spatial objects	Applies to redundant coordinates being removed from an object. If the coordinates are within *SNAP* tolerance, they are discarded.
Objects with incomplete geometry	Refers to objects that do not have geometry, for example: tags that were placed without using the polygon builder process does not have a geometry.
Objects outside database extents	Checks if the objects selected are within the confines of the geographic extents of the database.
Attribute rules	Checks for the attribute rules as specified in the MUNSYS_INTEG_ATTR table, for example NULL values, etc.
Attribute data types	Checks the data type to be consistent with what is in the database; i.e. attached attributes should not exceed the limits of the table's column definition, for example, a tag, may not be longer then the table's TAG_VALUE column width.

Figure 14 The spatial object integrity check

Validating Telecoms object integrity

1 Do one of the following:

- Choose **Capture** > **Data Integrity** > **Validate Object Integrity...**
- Click the **Validate Object Integrity** button on the **Integrity** toolbar.

2 Select the objects that you want to validate, and then press ENTER.

The Integrity Results dialog box is displayed, providing summarized information and validation results encountered during the object integrity check.

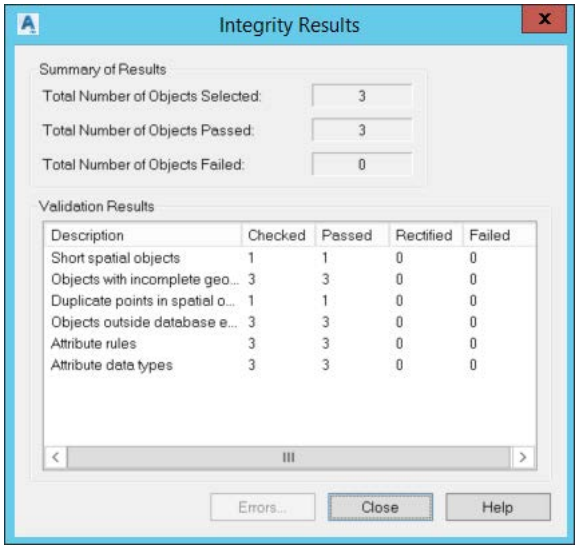

Figure 15 The Integrity Results dialog box

Validating Telecoms network integrity

1 Do one of the following:

- Choose **Capture** > **Data Integrity** > **Validate Network Integrity...**
- Click the **Validate Network Integrity** button on the **Integrity** toolbar.

2 Select the objects that you want to validate, and then press **ENTER**.

When the network integrity check has completed, the command line shows details of the objects that were validated. Integrity markers are displayed on integrity errors.

Browsing integrity markers

You can review the integrity markers resulting from the integrity check with the Browse Integrity Markers dialog box. This dialog box displays the complete list of errors encountered during the integrity check. The list consists of the error type, the object affected, a description of the error, and the GID of the spatial object. From this dialog box, you can locate and remove specific integrity markers in the drawing.

To browse integrity markers

1 Do one of the following:

- Choose Capture > Browse Integrity Markers...
- Click the Browse Integrity Markers button on the Integrity toolbar.
- Click the Errors... button on the Integrity Results dialog box.

The **Browse Integrity Markers** dialog box is displayed.

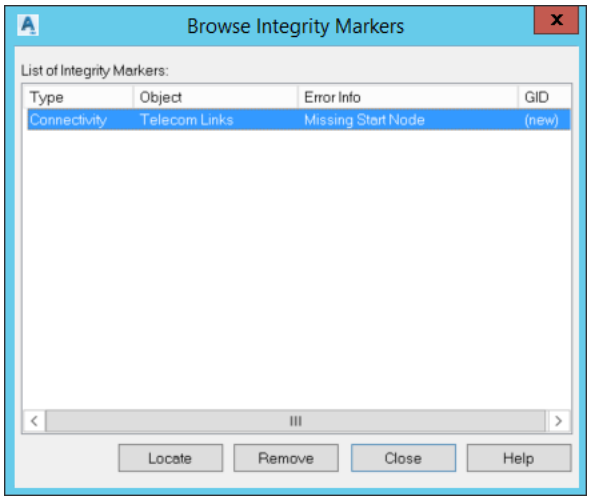

Figure 16 The Browse Integrity Markers dialog box

2 To locate an error, select the appropriate integrity marker, and then click the **Locate** button.

Munsys zooms to the extent of the object to which the integrity marker refers.

3 To remove integrity markers from the list *and* from the drawing, select one or more integrity markers from the list, and then click the **Remove** button.

The integrity markers are removed from the drawing and from the list of markers.

Erasing integrity markers

With this function, you can erase all the integrity markers. Integrity markers are stored on the **INTEG** layer.

To erase integrity markers

1 Do one of the following:

- Choose Capture > Erase Integrity Markers.
- Click the Erase Integrity Markers button on the Integrity toolbar.

The command line prompts you for confirmation to erase all the integrity markers.

2 Press ENTER to erase the integrity markers.

The integrity markers are erased.

Posting telecoms data to the database

New or modified telecoms data that has passed the integrity check is posted to the database.

To post telecoms data to the database

1 Do one of the following:

- Choose Capture > Post to Database...
- Click the Post to Database button on the Integrity toolbar.

The **Database Posting Summary** dialog box is displayed.

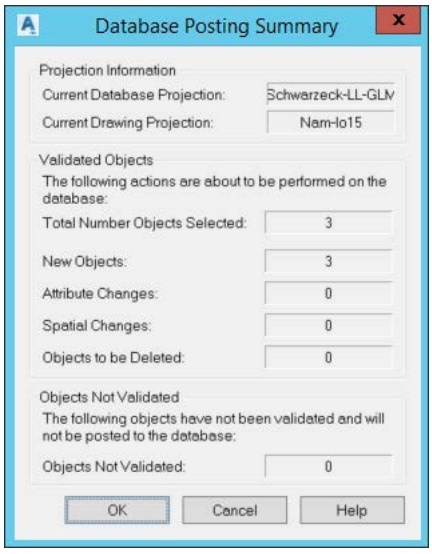

Figure 17 The Database Posting Summary dialog box

This dialog box displays the following:

- The total number of spatial objects selected for posting
- The number of new objects created
- The number of attribute changes made
- The number of spatial changes made
- The number of objects marked for deletion
- The number of objects that have not been validated and that will not be posted to the database

2 Click OK to update the database.

The **Database Posting Results** dialog box is displayed.

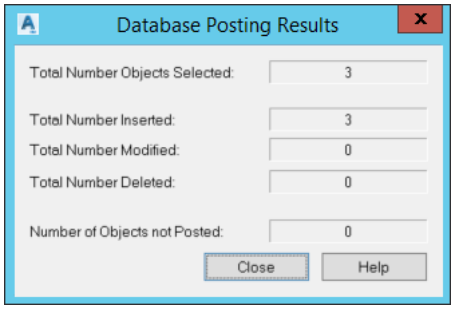

Figure 18 The Database Posting Results dialog box

This dialog box displays the following:

- The total number of objects selected for posting to the database
- The total number of spatial objects inserted into the database
- The total number of spatial objects modified in the database
- The total number of spatial objects deleted from the database
- The total number of objects not posted to the database

3 Click **Close** to exit the **Database Posting Results** dialog box.

Converting AutoCAD entities to telecoms objects

With Munsys, you can convert selected AutoCAD entities to Munsys Telecoms objects. Block entities can be converted to telecoms nodes (backbone, carrier and local network nodes), line entities can be converted to telecoms links, cables, service connections or routes, text can be converted to telecoms area or site tags or telecoms notes, and polygons can be converted to telecoms areas or sites.

Although some basic attributes are assigned as part of the conversion process, you will need to assign attributes to the objects created with the conversion process.

To convert block entities to telecoms nodes

With this function, you can convert AutoCAD block entities to any of the available telecoms nodes.

1 Do one of the following:

- Choose **Extras** > **Convert Block to Backbone Node** > **Node Name**.
- Choose **Extras** > **Convert Block to Carrier Node** > **Node Name**.
- Choose **Extras** > **Convert Block to Local Network Node** > **Node Name**.

2 Select the block entities that you want to convert, and then press **ENTER**.

One telecoms node is created for each block entity that you selected, and the drawing is updated accordingly.

To convert line entities to telecoms objects

With this function, you can convert line entities to links, cables, service connections or routes.

To convert line entities to telecoms objects, do the following:

1 Choose **Extras** > **Convert Line to** > *Telecoms Object Name*.

2 Select the line objects that you want to convert to telecoms objects, and then press **ENTER**.

The selected line objects are converted, and the drawing is updated accordingly.

To convert text to telecoms notes or tags

With this function, you can convert AutoCAD text entities to telecoms area or site tags or telecoms notes.

1 Do one of the following:

- Choose **Extras** > **Convert Text to** > **Telecoms Area/Site Tag**.
- Choose **Extras** > **Convert Text to** > **Telecoms Note**.

2 Select the objects that you want to convert, and then press **ENTER**.

The entities are converted to the telecoms objects that you specified, and the drawing is updated accordingly.

To convert polygons to telecoms areas or sites

1 Do one of the following

- Choose **Extras** > **Convert Polygon to** > **Telecoms Area**.
- Choose **Extras** > **Convert Polygon to** > **Telecoms Site**.

2 Select the polygons that you want to convert, and then press **ENTER**.

The polygons are converted to telecoms areas or sites, and the drawing is updated accordingly.

Chapter 5
Maintaining telecoms data

Introduction

Spatial and attribute data is stored in tables as records. Telecoms objects that need to be edited are retrieved from the database onto their respective layers.

From the Munsys Telecoms **Change** menu, you can edit attributes, move and rotate nodes, edit the vertices of telecoms cables, change the cable, node and service connection attributes, reset nodes and reconnect cables, add comments, change telecoms notes, and delete and undelete telecoms objects.

Telecoms objects that have been changed need to be checked against the telecoms business rules before they can be posted to the database.

Important Please consult the **HLSD_Telecom_ICMS_Integration_R02.pdf** document for information on how the node and cable maintenance has been modified to incorporate checks on the ICMS tables for valid Node IDs, Cable IDs, From Pair and To Pair ranges. This document details the exact change methods.

Editing attributes

With Munsys Telecoms, you can change individual physical attributes of telecoms objects. You can also change telecoms object attributes from the **Edit *Object* Info** dialog box; for example, if you want to change the attributes of a telecoms cable, the **Edit Telecoms Cable Info** dialog box is displayed. The values can be changed by either selecting a new value from a drop-down list or by typing in a new value. Only one object at a time can be edited.

The Edit Attributes function is used to edit the attributes of one or more selected telecom objects that belong to the same object type. The current application determines what object types may be selected; for example, if you are working in Munsys Telecoms, only telecom objects may be selected. If you select more than one object type (for example cables and nodes), you will be required to choose a single object type to edit.

Objects that are selected for editing are locked (if record locking is enabled in the database). Once the objects have been selected and an object type to edit has been specified, the Edit Attributes dialog box is displayed. This dialog box contains various options that can be used to edit the attributes of the spatial objects:

- Attribute templates – attributes can be edited using an attribute template. The attributes that will be displayed when an attribute template has been selected will depend on the attributes that have been specified on the template, as well as the formatting parameters that apply to each column selected as part of the attribute template. If no attribute template has been selected, all the attributes belonging to the spatial object type are displayed.
- Editing multiple objects simultaneously – if you select this option, attributes of multiple objects are displayed simultaneously. Where the attributes of all the selected objects are the same, a value is displayed. Where attributes of the various objects that were selected differ, a value of *VARIES* is displayed. When a change is made to a value, the new value is applied to all the selected objects. If you do not select the Edit multiple objects simultaneously check box, you can edit the selected objects one by one. The values that are changed are only applied to the object that is currently selected.
- AutoZoom – this option is only available when the Edit multiple objects simultaneously option is not selected, i.e. when you are going to edit the objects one by one. If the AutoZoom to object option is selected, Munsys will zoom to each object in the drawing as it becomes the current object, and highlight it. The object navigation buttons are used to move from one object to the next.

The various attributes are displayed on the Edit Attributes dialog box in three columns: Description, Value and Column Name. You can resize the dialog box for easier viewing. Values that may not be edited are unavailable. Attributes are edited in the *Value* column, either by typing a new value or by selecting a value from a drop-down list. Changes that are made are applied to objects in the drawing. These changes will only be updated in the database when the object integrity check has been run and the objects have been posted to the database.

When editing attributes, mandatory fields are displayed with an "!" character prefixing the attribute column in the Attributes list on the Edit Attributes dialog box. If the mandatory attribute is not captured for new or modified objects, the Object Integrity Check will fail based on the attribute rules setup. Using the Browse Integrity Markers option, the Error Info describes which column may not be NULL.

To edit telecoms attributes

1 Choose **Change** > **Edit Attributes...**

2 Select the object of which you want to change the attributes (in this example, a telecoms node).

The **Edit Telecoms Cables Info** dialog box is displayed.

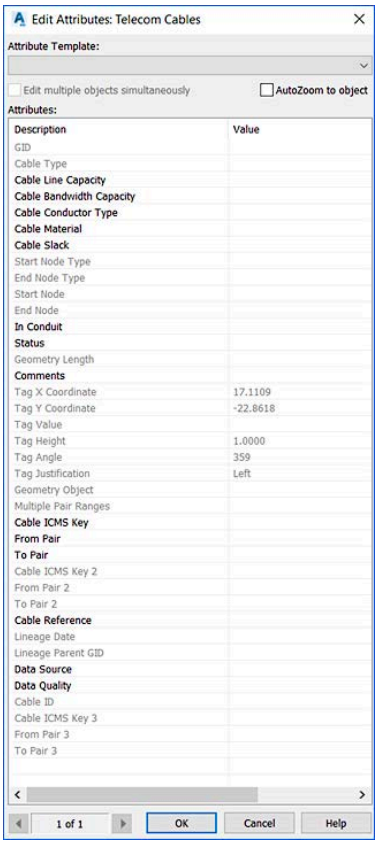

Figure 1 The Edit Telecoms Cables Info dialog box

3 To change a value, do one of the following:

- Highlight the current value, and then enter a new value.
- Highlight the current value, and then choose the new value from the drop-down list.

4 Click **OK** to apply the new values.

Changing telecoms cables and links

With Munsys Telecoms, you can change, add or insert a vertex into a telecoms cable. Cables can be reconnected to repair connectivity, and the bandwidth capacity of links can be changed. You can also change cable attributes such as line and bandwidth capacity, conductor type and material.

Changing cable attributes

This group of functions is used to change attributes of telecoms cables. You can change the line and bandwidth capacity, the conductor type and the material of one or more selected cables.

To change line capacity

1 Choose **Change** > **Cable Attribute** > **Line Capacity...**

2 Select the cable(s) that you want to change, and then press **ENTER**.

The **Select Cable Line Capacity** dialog box is displayed. If you selected one cable to change, the current line capacity is highlighted. If you selected multiple cables, no current line capacity is highlighted.

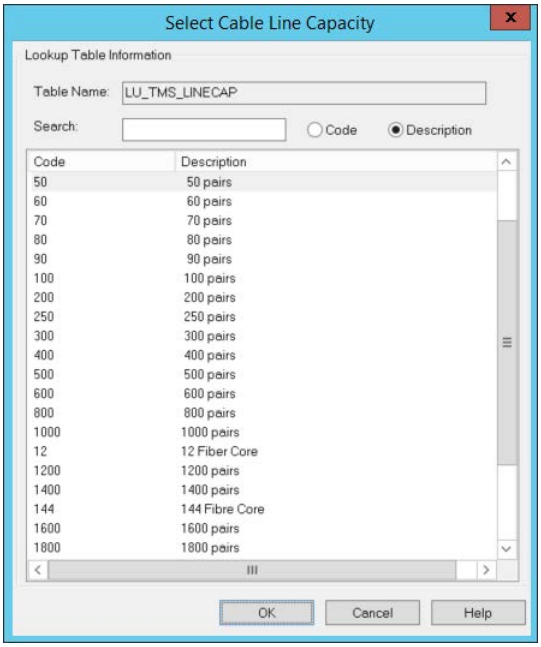

Figure 2 The Select Cable Line Capacity dialog box

3 Select the appropriate line capacity from the list, and then click **OK** to apply.

To change bandwidth capacity

1 Choose **Change** > **Cable Attribute** > **Bandwidth Capacity...**

2 Select the cable(s) that you want to change, and then press **ENTER**.

The **Select Cable Bandwidth Capacity** dialog box is displayed. If you selected one cable to change, the current bandwidth capacity is highlighted. If you selected multiple cables, no current bandwidth capacity is highlighted.

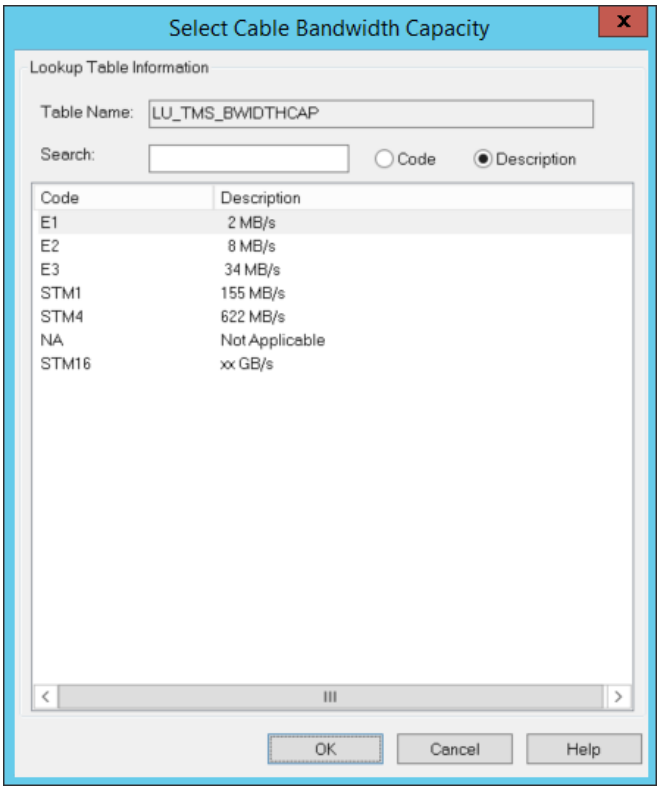

Figure 3 The Select Cable Bandwidth Capacity dialog box

3 Select the appropriate bandwidth capacity from the list, and then click **OK** to apply.

To change a conductor type

1 Choose **Change** > **Cable Attribute** > **Conductor Type...**

2 Select the cable(s) that you want to change, and then press **ENTER**.

The **Select Cable Conductor Type** dialog box is displayed. If you selected one cable to change, the current conductor type is highlighted. If you selected multiple cables, no current conductor type is highlighted.

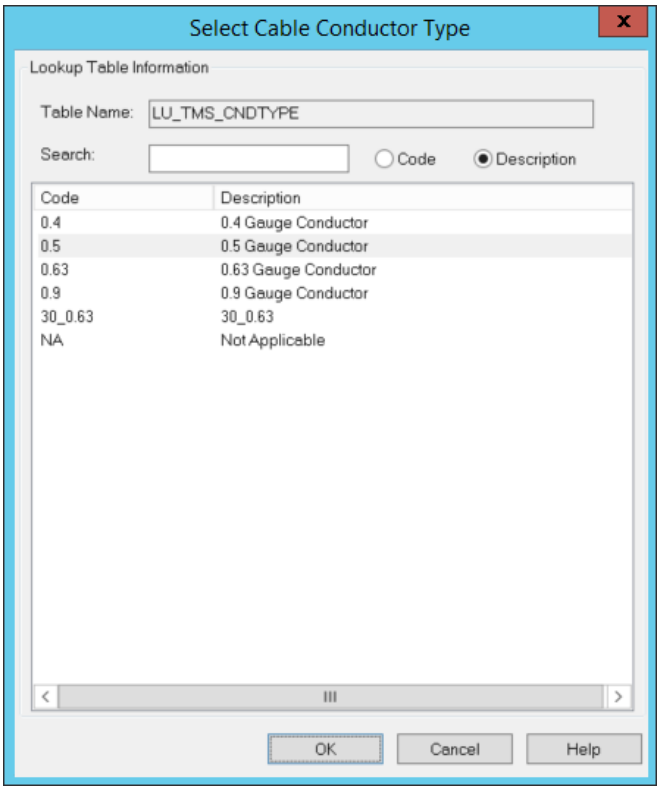

Figure 4 The Select Cable Conductor Type dialog box

3 Select the appropriate conductor type from the list, and then click **OK** to apply.

To change cable material

1 Choose **Change** > **Cable Attribute** > **Material...**

2 Select the cable(s) that you want to change, and then press **ENTER**.

The **Select Cable Material** dialog box is displayed. If you selected one cable to change, the current cable material is highlighted. If you selected multiple cables, no current material is highlighted.

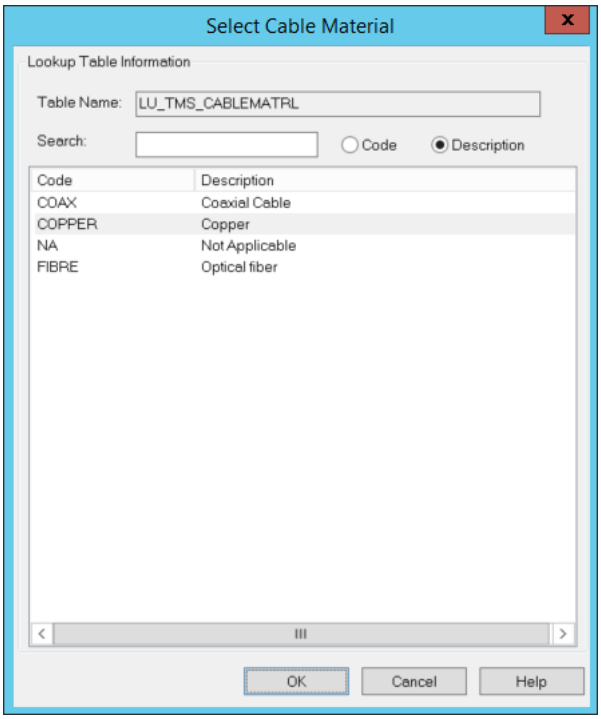

Figure 5 The Select Cable Material dialog box

3 Select the appropriate cable material, and then click OK to apply.

To change a Cable In Conduit

1 Choose **Change** > **Cable Attributes** > **In Conduit.**

2 Select the cable(s) that you want to change, and then press ENTER.

The option for Y or N is displayed. If you selected one cable to change, the default in conduit option is displayed on the command line.

To Reconnect Cables

If any of the Cable Route Node Types are changed or replaced in any way, it is recommended that the Telecom Cables which reside in the Cable Route be reconnected to ensure that the Start and End Node Types are updated to the cable attributes, and Start and End Node IDs are updated to ensure the cable direction is captured.

Before you start this command, ensure that you know the direction of the cable to be reconnected so that you can correctly select the start and end Cable Route Nodes.

1. Choose **Change** > **Reconnect Cable**
2. Select the cable that you want to reconnect.
3. Select start node (STUBBY/SECJOINT/SDC/PRIMJOINT/MDF/DPSTUBBY/DP/DIGI) for cable:
4. Select the end node (STUBBY/SECJOINT/SDC/PRIMJOINT/MDF/DPSTUBBY/DP/DIGI) for cable:

   The START_TYPE, END_TYPE_START_NODE and END_NODE attributes are updated and the cable must first pass the Object Integrity before posting the changes to the database.

Breaking Cable Routes which are ‘In Use’

While Munsys Cable Route application caters for the capture and maintenance of cable routes and cable route objects such as ducts and infrastructure such as vaults, sites, manholes and other relevant infrastructure polygons, and for cable route nodes such as fiber rooms, fiber joints, etc., to break a cable route which is ‘In Use’ must be done using the Munsys Telecom application.

A Cable Route is deemed ‘In Use’ when there are either Fiber Cables or Telecom Cables placed within the Cable Route. At the selected break point on the Cable Route, either a Primary or Secondary Telecom Node is placed. This cable route node is automatically captured in the Cable Route Node spatial table **SP_CRTNODE**. The Cable Route is then broken into two separate assets, and the start/end cable route nodes are updated accordingly.

Before the ‘In Use’ Cable Route can be broken, is recommended that an Infrastructure Node is captured on the Cable Route at the point the Cable Route is to be broken. This is be done using the standard capture functionality in the Munsys Cable Route Application by selecting the **Capture > Infrastructure** menu option and selecting a infrastructure type from the available list. The new Infrastructure Node must have the passed the Object Integrity before being posted to the database before the ‘In Use’ Cable Route can be broken.

Note Before your initiate the command, ensure you have all existing Fiber Routes and Infrastructure Nodes queried into the drawing for selection.

To Break a Cable Route which is ‘In Use’

1 Choose **Change** > **Break Cable Route (In Use)**

2 A Warning Message will be displayed advising that all cables using the selected Cable Route will be affected. Select **OK** to continue, or press the **Esc** keytwice to cancel.

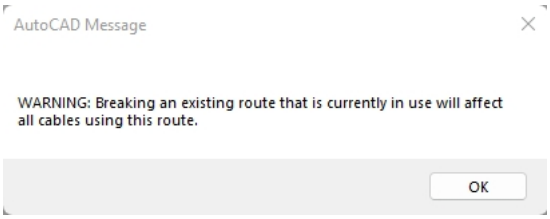

Figure 6 Warning Message when initiating the Break Cable Route (In Use) command

3 Select the Cable Route to break.

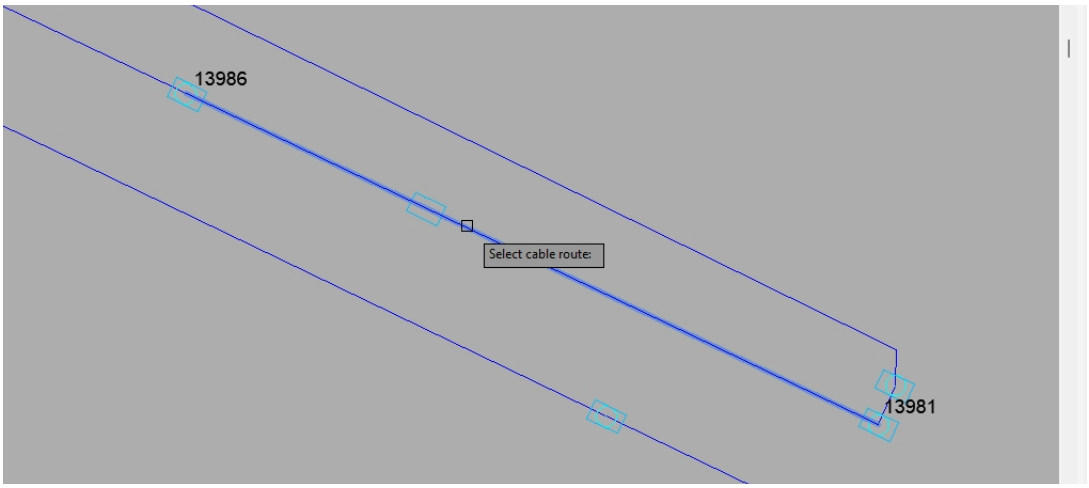

Figure 7 Select the Cable Route to Break

4 Select the break point on the Cable Route.

5 The Telecom Nodes dialog box is displayed prompting the user to select either a Primary or Secondary Joint. Select the required node and select **OK** to continue, or **Cancel** to halt the process.

Note A Primary or Secondary node will be placed in the drawing at the selected break point on the Cable Route.

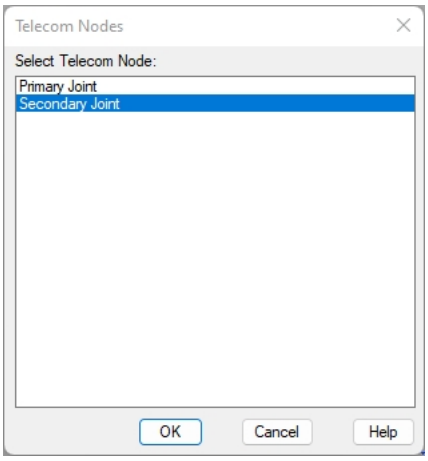

Figure 8 Select Primary or Secondary Joint

6 The selected Joint is placed in the drawing at the selected break point on the Cable Route.

7 You will be prompted to select the Infrastructure or [Skip]

8 Select the Infrastructure from the drawing if captured.

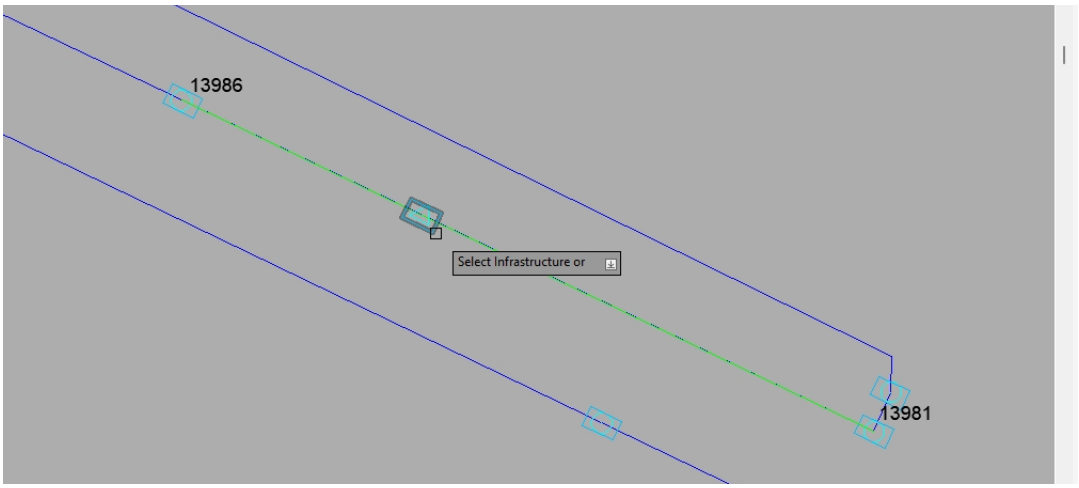

Figure 9 Select the infrastructure

9 The Cable Route is broken into two Cable Route Link assets, where the start/end nodes are automatically updated. No further action is required.

```
Select cable route:
Specify break point:
1 Cable Route Nodes retrieved
Transformed spatial objects from Schwarzeck-LL-GLM to TELNAM-LO17-M
Select Infrastructure or [Skip]:
2 Cable Route Links retrieved
Transformed spatial objects from Schwarzeck-LL-GLM to TELNAM-LO17-M
Command:
```

Figure 10 Select the infrastructure

10 Show Info on the Cable Route in the spatial table SP_CRTLINK displays a new Cable Route asset was created.

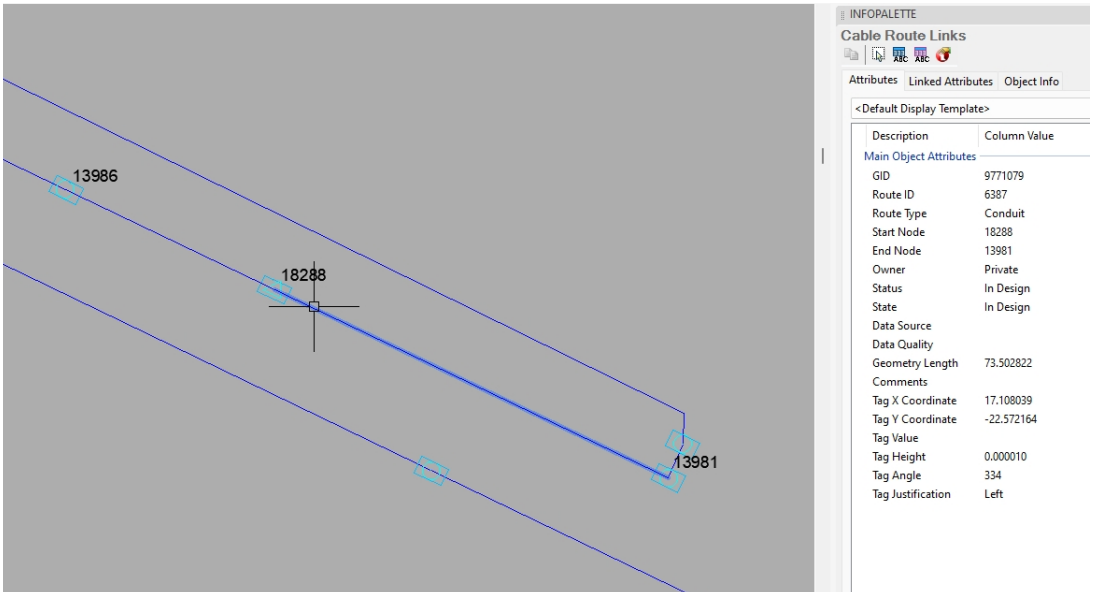

Figure 11 Cable Route broken at selected break point.

11 The Show Info on the newly added Secondary Joint (in the spatial table SP_CRTNODE) displays the link to the Infrastructure Node (in the spatial table SP_CRTINFSTRUCT), where the LINK_TYPE indicates the value ‘Infrastructure’, and the LINK_ID indicates the INF_ID value of the Cable Route Infrastructure node, for example, ‘828’.

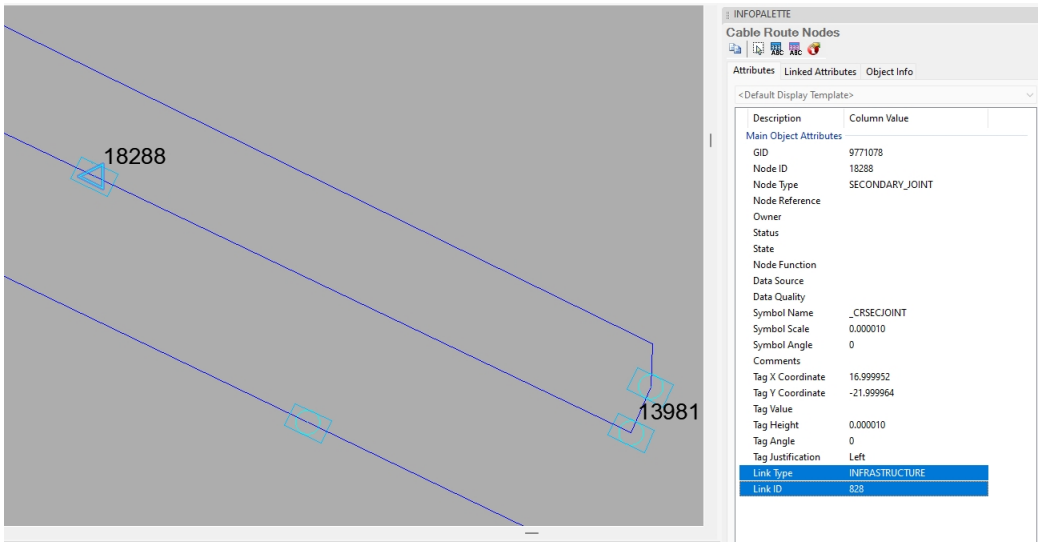

Figure 12 Show Info on Cable Route Node display link to Infrastructure Node

Changing telecoms service connections

With Munsys Telecoms, you can change a service connection type and link service connections to their respective parcels.

Changing a service connection type

This function is used to change the service connection type of one or more selected service connections.

To change a service connection type

1 Choose **Change** > **Change SC Type...**

2 Select the service connection(s) that you want to change, and then press **ENTER**.

The **Select Service Connection Type** dialog box is displayed. If you selected one service connection to change, the current service connection type is highlighted in the dialog box. If you selected more than one service connection to change, no current service connection type is highlighted.

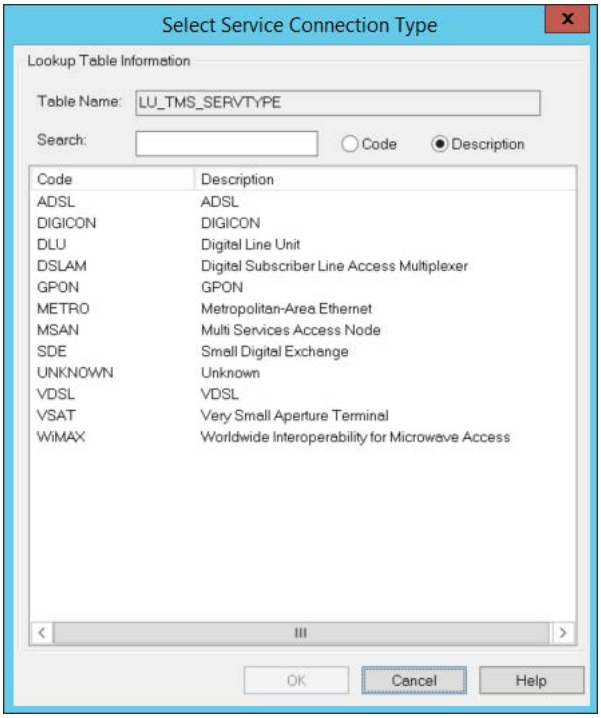

Figure 13 The Select Service Connection Type dialog box

3 Select the new service connection type from the list, and then click **OK** to apply.

Linking service connections to parcels

This function is used to link one or more selected service connections to their respective parcels.

To link service connections to parcels

1 Choose **Change** > **Link SCs to Parcels**.

2 Select the appropriate service connections, and then press **ENTER**.

The selected service connections are linked to their respective parcels.

Set Available Services

This function is used to assign available services to one or more selected parcels.

To add available services

1 Choose **Capture** > **Set Available Services > Add Available Service.**

2 Select the parcel(s) to which you want to assign a service on.

The **Add Available Services** dialog box is displayed.

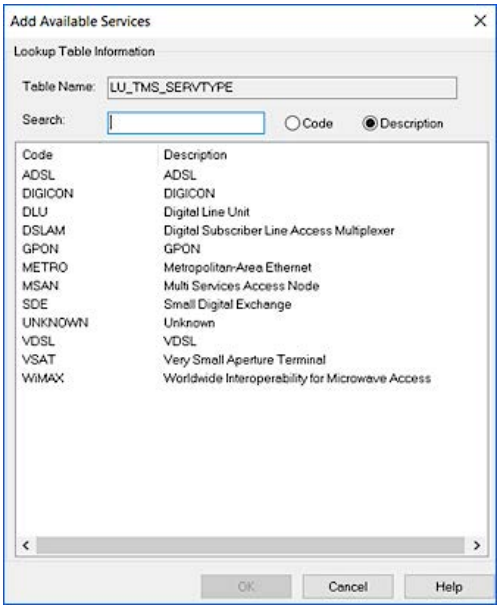

Figure 14 The Add Available Services dialog box

3 Select a service from the list, and then click **OK**.

The service is assigned to the parcel(s) that you selected.

To remove available services

1 Choose **Capture** > **Set Available Services > Remove Available Service.**

2 Select the parcel(s) to which you want to asign a service on.

The **Add Available Services** dialog box is displayed.

Changing the category of telecoms objects

This function is used to change the telecoms category of one or more selected telecoms sites, routes, symbols, notes or dimensions. You cannot change the category of nodes, links and cables.

To change telecoms category

1 Choose **Change** > **Change Telecoms Category...**

2 Select the telecoms objects that you want to change.

The **Select Telecoms Category** dialog box is displayed. If you selected one object to change, the current category is highlighted. If you selected more than one object from different categories to change, no current category is highlighted.

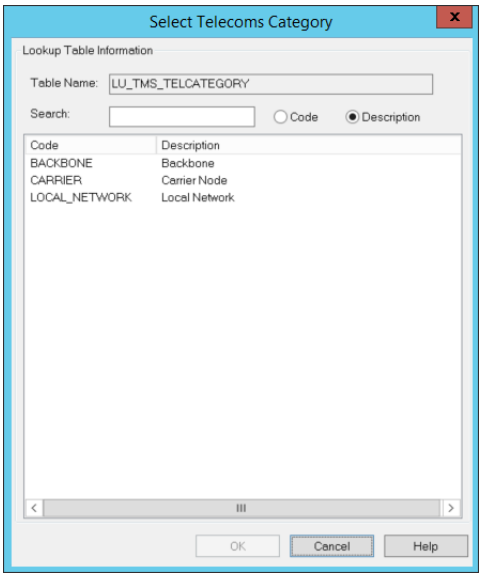

Figure 15 The Select Telecoms Category dialog box

3 Select the new category from the list, and then click **OK** to apply.

Changing telecoms notes

With this function, you can change the text of telecoms notes, using the Telecoms Note text box.

To change a Telecoms note

1 Choose **Change** > **Change Telecoms Note...**

2 Select the telecoms note that you want to change.

The **Telecoms Note** text box is displayed.

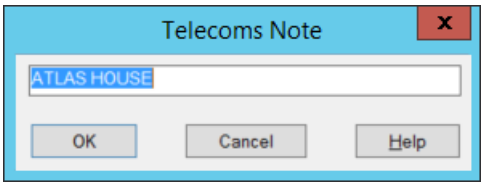

Figure 16 The Telecoms Note text box

3 Change the note as required, and then click **OK**.

Adding comments

This function is used to assign descriptive comments to one or more selected telecoms objects.

To add comments

1 Choose **Change** > **Add Comment...**

2 Select the telecoms object(s) that you want to add a comment to.

The **Telecoms Comment** text box is displayed.

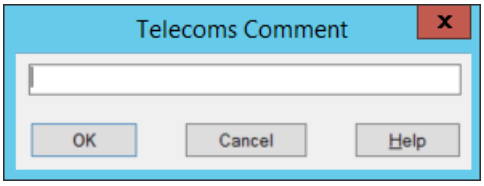

Figure 17 The Telecoms Comment text box

3 In the text box, add the comment, and then click **OK**.

The comment is assigned to the selected object(s).

Deleting and undeleting telecoms objects

With Munsys Telecoms, existing telecoms objects can be deleted from the database. Multiple objects can be selected for deleting. Telecoms objects that form part of a redundant network have to be deleted. Deleted telecoms objects are moved to a frozen layer **DELETED**, which is removed from the database when changes are posted. With the Undelete function, you can restore telecoms objects that have been moved to the **DELETED** layer and that are marked for deletion.

To delete telecoms objects

1 Choose **Change** > **Delete Telecoms Object**.

2 Select the telecoms objects that you want to delete.

3 The command line indicates how many objects you have selected, and how many have been filtered out.

4 Press **ENTER** to delete the selected telecoms objects.

The telecoms objects are flagged for deletion and moved to the layer **DELETED**. These changes are applied to the database when changes are posted.

To undelete telecoms objects

With this function, you can restore telecoms objects that have been moved to the **DELETED** layer and that are marked for deletion.

1 Choose **Change** > **Undelete Telecoms Objects**.

The telecoms objects that you deleted are displayed in the drawing.

2 Select the telecoms objects that you want to be restored.

The **Delete** flag is no longer set for the selected objects. In the event of spatial or attribute changes before the objects were flagged for deletion, these changes are applied.

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