The Telnet Driver

The Telnet driver provides a Telnet-based API to a North device, allowing your application to request and adjust any value accessible to the device. Available for Commander and ObSys.

This document relates to Telnet driver version 1.1

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Purpose of Telnet driver

The Telnet driver provides a Telnet-based API to a North device, allowing your application to request and adjust any available value.

Sometimes it is necessary to talk to a North device without using web pages or engineering software, perhaps from your own application or product. This could be to request values from a connected system, or configure objects within the North device itself. The driver provides a Telnet server that enables simple text-based access to any object value within the North device.

The driver supports two services within the Telnet TCP/IP session – query-response and IP-information.

Other APIs are available: JSONData and JSONNotify drivers provide JSON web services; the DataSync driver provides a simple text-based interface; the SG driver provides an RS232 request-reply interface; and many other standards-based drivers are available.

Values

You can connect to the Telnet Server using a Telnet client application. Ener the User ID when prompted, followed by the service required.

The services available are:

- Query-Response (‘qr’) – request and adjust the value of any object
- IP-Information (‘ipc’) –LAN Port settings for the North device.

Security

The Telnet service provides access to any object within or accessible to the North device, and so should be enabled with caution. The driver can limit access based on different networks. Access from local and remote networks can be restricted: read-and-write, read-only, or none.

Only a simple User-ID provides basic authentication, and all data is unencrypted.

Detailed Operation

Establishing a Session

Establish a Telnet session to North device by opening a TCP/IP connection on port 23.

Messages are formatted as a line of ASCII text. Each line of text, or message, must end with a carriage-return (control code 0x0D) and line-feed (control code 0x0A) – represented in this manual using the symbol: ↵.

By default, access is set to read-only from the local network, with a randomly generated user-ID to act as a simple authentication token.

Once connected, enter the user-ID and then the service:

```
Telnet – North Telnet
User:*****↵
Service:
```

For help, enter '?' at the service prompt.

Echo is always enabled.

To close a session, send a line-feed at the service prompt. Alternatively, the session will automatically close after 5 minutes of inactivity.

IP Information Service

The Telnet IP-information service is used to discover the current network settings of the North device.

At the service prompt, enter 'ipc' and it will respond with the current IP configuration:

```
Service:ipc↵
IP Configuration..
Network 1:
   Address. . 192.168.192.167
   Mask . . . 255.255.255.0
   Gateway. . 0.0.0.0
```

Query Response Service

Using the Telnet query-response service, you can request and adjust the value of any object within, or connected to, the North device.

At the service prompt, enter 'qr' and the Telnet session will enter query-response mode:

```
Service:qr↵
Q:
```

Enter the query command at the Q: prompt and the North device will respond at the R: prompt.

Reading a Value

At the query prompt, enter the object reference to read. North device responds with the object value.

```
Q:object↵
R:value
```

For example, to read the local date & time (object O.T):

```
Q:O.T↵
R:01/12/15|15:40:08
Q:
```

Writing a Value

At the query prompt, enter the object reference and value to set. North device will respond with 'Ok' to indicate the object adjusted successfully.

```
Q:object=value↵
R:Ok
```

For example, to set the North device's Site Label (object O.L) to 'New Device':

```
Q:O.PL=New Device↵
R:Ok
Q:
```

Error Response

If the service encounters an error when processing a query command, it will respond with the error prompt (E:) followed by one of the following three-character error code:

Error Code	Reason
OBJ	Object reference invalid
ACT	Action invalid – cannot read/write this object
VAL	Value invalid
FLT	General fault
DDV	Device delivery fault
PDV	Point delivery fault
NDV	Network delivery fault
???	Unknown error or timeout

For example, attempt to read the invalid object reference ABCDE:

```
Q:ABCDE↵
E:OBJ
Q:
```

Using the Driver

On ObSys and Commander, the Telnet driver is pre-installed. Once started, you will need to set up the driver before it can used.

Starting the Interface

💻 To start an interface using the Telnet driver, follow these steps:

- → **Start Engineering** your North device using ObSys
- → Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'Telnet' to start the particular interface
- → Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **Telnet Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

💻 To set up the driver, follow these steps:

- → Navigate to the **Telnet Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
- → Set **Access from Local Networks** (LNA) to the required level, by default this is 'read-only'. This enables the operation of telnet, and will open a listening port
- → Use your telnet software to access the telnet service

Checking Communications

Check **Server Open** (DS) to check if the Telnet service is available, the **Active Sessions** (SC) and **Session *x*** (S*x*) objects to monitor the Telnet connections in use.

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) - the whole object structure being a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: The Telnet Driver (M1) contains an Enable object (TE). Therefore, the complete object reference will be 'M1.TE'.

An example of a reference to an object in a different device: the IP network object (IP) contains an IP alias object of another North ObSys instance (A1), which contains the object above (M1.TE) – therefore the complete object reference is 'IP.A1.M1.TE'.

Device Top-Level Objects

When an interface is started using the TelDial driver, the objects below become available within the top-level object of the device. For example, if Interface 1 is started, then the object with references 'M1' and 'S1' become available.

Description	Reference	Type
Telnet Set up the Telnet driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On ObSys platforms this will be *[OSM v20\Telnet v11]* On Commander platform with will be *[CDM v20\Telnet v11]*

Telnet

Object Type: *[OSM v20\Telnet v11]*
Object Type: *[CDM v20\Telnet v11]*

A Telnet object controls access to the Telnet server from Telnet clients elsewhere on the network.

Control client access using the Access from Local Network (LNA) and Access from Remote Network Access (RNA) objects. Set both to 'None' to turn off Telnet.

The session label is returned when a Telnet client opens the session. The client is then prompted for a user ID. If successfully authenticated, the session then asks which service the telnet client wants.

For information on establishing a Telnet session and the commands supported, refer to the *Detailed Operation* section.

Description	Reference	Type
Session Label Provided when a Telnet session is opened	DL	Obj\Text; Max chars 20; Adjustable
Access from Local Network Control access to Telnet from devices on the local network – an IP address on the same network as the North device	LNA	Obj\ENum; Adjustable Values: 0=None, 1=Read-only, 2=Read-write
Access from Remote Networks Control access to Telnet from devices on the remote networks – an IP address on a different network address than the North device	RNA	Obj\ENum; Adjustable Values: 0=None, 1=Read-only, 2=Read-write
Server Open Telnet service is available	DS	Obj\NoYes
User ID Username required to access the Telnet service	ID	Obj\Text; Max chars 31; Adjustable Default: random key
Active Sessions Number of Telnet sessions currently established	SC	Obj\Num: 0…4
Session *x* Information about an active session. The session number, *x*, is in the range 1…4	S*x*	Fixed Container: On ObSys platforms this will be *[OSM v20\Telnet v11\Session]* On Commander platform with will be *[CDM v20\Telnet v11\Session]*

Telnet Session

Object Type: *[OSM v20\Telnet v11\Session]*
Object Type: *[CDM v20\Telnet v11\Session]*

A Telnet Session object provides information about an active session to the Telnet server.

Description	Reference	Type
State Current session prompt	S	Obj\Enum Values: 0=Disconnected, 1=Open, 2=User prompt, 3=Service prompt, 4=Query-Response service, 5=Information, 6=Closing
IP Address IP Address of connected client	IP	Obj\IP
Last Command Text or command received from client	LC	Obj\Text

Driver Versions

Version	Build Date	Details
1.0	11/01/2011	Driver released. Built-in with Commander and ObServer
1.0	19/07/2013	Modified to allow two telnet sessions
1.0	02/03/2014	Improvements to processing long message
1.0	26/08/2014	Resolved issue with LinkDown not closing active session
1.0	20/10/2017	Resolved issue during high resource use on device Modified to allow four telnet sessions
1.0	01/05/2018	Optimisations for Cmdr Hub
1.0	21/10/2020	Resolved issue enable: Telnet port was not reopening
1.0	22/11/2021	Improvements to receive buffer
1.1	01/07/2025	Secure by default improvements: Driver no longer automatically started on Commander and ObServer. Must be loaded as driver. Added Local/Remote Network Access objects, replacing Tenet Enable. Removed enable when DEFAULTIP switch on. Increased length of User-ID value, random ID created on initialisation Added DS object. Added Session objects

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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