



# The XmlRead Driver

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The XmlRead driver allows North to read extensible mark-up language (XML) files, and provide access to their values using objects. Available for Commander and ObSys.

This document relates to XmlRead driver version 1.0

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from [www.northbt.com](http://www.northbt.com)

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# Purpose of XmlRead Driver

The XmlRead driver allows North to read extensible mark-up language (XML) files, and provide access to their values using objects.

The driver can read values from up to 32 different files.

XmlRead can access files stored remotely on a web server using HTTP/WebDAV. Authentication is not supported.

On ObSys, XmlRead can also access files stored on the local PC or network path.

The CSVRead driver is also available to read data from a delimiter-separated text files, such as a CSV file.

## Values

The driver will load the XML file, and make its element and attribute tag values available.

## Prerequisites

Locate the XML files that the driver should read. Be aware that when editing or viewing a file, some software locks the file so that other applications cannot access it.

The driver provides object access to the XML file using a tag index. This is not suitable for XML files that change the order of their element/attribute tag structure.

# Operation

## Cache

The driver can access data from up to 32 files, but can only hold in memory the data from four files at any one time. Therefore, the driver uses a caching mechanism.

When a task requests an object from the driver for a value within a particular file, the driver loads the file into memory. If necessary, the driver will overwrite a file already in memory. Once loaded, the driver holds the file in memory until the file's data is deemed out-of-date (i.e. its cache life has expired), or until the memory is needed for another file.

If the driver needs to overwrite a file already in memory, it keeps the most recently accessed files and overwrites the file that has not been accessed for the longest period.

## Caution

If data from more than four files is required, care should be taken to ensure tasks requesting values from the files are configured to allow the caching system to work efficiently.

- Consider the cache life for each file carefully
- Tasks should request all the data required from one file before requesting from another
- If several tasks need data from files, consider loading the data into Essential Data, and have the other tasks access the data from there.

## File Sizes

The driver allocates up to 24,000 bytes of memory for each file stored in the cache. The driver cannot access Xml files larger than this.

## Example XML File

The example below shows an XML file.

Message.xml

```
<?xml version="1.0"?>
<messages>
  <note ID="501">
    <to>Jim</to>
    <from>Sam</from>
    <heading>Reminder</heading>
    <body>Don't forget!</body>
  </note>
  <note ID="502">
    <to>Sam</to>
    <from>Jim</from>
    <heading>Re: Reminder</heading>
    <body>"I won't!"</body>
  </note>
</messages>
```

The XML file has an XML declaration section with a version, and a data section. The data section is enclosed within a single <messages> element tag. There are two note elements within the data, with ID attribute values of 501 and 502.

# Using the Driver

On ObSys, the XmlRead driver is pre-installed. On Commander, the driver is available to download in the file 'Bank15 XmlRead.cdm'.

Once started, you will need to set up the driver before it can read data from XML files.

## Starting the Interface

- 📖 To start an interface using the XmlRead driver, follow these steps:
  - **Start Engineering** your North device using ObSys
  - Navigate to **Configuration, Interfaces**, and set an unused **Interface** to 'XmlRead' to start the particular interface
  - Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **XmlRead Setup**, should now be available.

## Setting up the Driver

- 📖 To set up the driver, follow these steps:
  - Navigate to the **XmlRead Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
  - Navigate to **File 1 (F1)** and set the **Server IP/DNS (SN)**, **Filename (FN)**, and **Cache life (mins) (CL)**
  - Repeat for each XML file.

# 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.

## Device Top-Level Objects

When an interface is started using the CSVRead driver, the objects below become available within the top-level object of the device. For example, if interface 1 is started, then the object reference 'M1' becomes available.

| Description  | Reference | Type   |
|--|-----------|--|
| <b>XmlRead Setup</b><br>Set up the XmlRead driver, started on interface <i>c</i> ( <i>c</i> is the interface number) | Mc        | Fixed Container:<br>On the Commander platform this will be<br><i>[CDM v20\XmlRead v10]</i><br>On the ObSys platform this will be<br><i>[OSM v20\XmlRead v10]</i> |
| <b>XML Values</b>  | Sc        | Variable Container:<br><i>[XmlRead v10]</i>  |

# XmlRead Setup

Object Type: [OSM v20\XmlRead v10]

Object Type: [CDM v20\XmlRead v10]

The XmlRead driver contains the following objects.

| Description   | Reference | Type   |
|---|-----------|--|
| <b>System Label</b><br>Label displayed when scanning the system   | DL        | Obj\Text; Max 20chars; Adjustable  |
| <b>File x</b><br>Configuration details for reading File x, where x is in the range 1..32  | Fx        | Fixed Container:<br>On the Commander platform this will be<br><i>[CDM v20\XmlRead v10\File]</i><br>On the ObSys platform this will be<br><i>[OSM v20\XmlRead v10\File]</i> |
| <b>Debug Enable</b><br>This will store additional debug information in the record file. Use this option only when instructed by North Support | DE        | Obj\Num; Adjustable  |

## XmlRead File

Object Type: [OSM v20\XmlRead v10\File]

Object Type: [CDM v20\XmlRead v10\File]

A XmlRead File Setup contains the following objects.

| Description  | Reference | Type   |
|--|-----------|--|
| <b>Server IP/DNS</b><br>DNS or IP address of remote web or WebDAV server, with TCP port number (default 80).<br>On ObSys platform, leave this field blank to accessing a local PC or network path  | SN        | Obj\Text; Max 120 chars; Adjustable<br>Format: <DNS name or IP address>:<port><br>Example: data.northbt.com:8080   |
| <b>Filename</b><br>Resource name of file to read.<br>On ObSys, for a local PC or network file this should include the full path.<br>To assist in reading a time-based filename, the following variables can be used:<br>\$(th) – current time: hours (2-digit)<br>\$(tm) – current time: minutes (2-digit)<br>\$(ts) – current time: seconds (2-digit)<br>\$(dd) – today’s date (2-digit)<br>\$(dm) – today’s month (2-digit)<br>\$(dy2) – today’s year (2-digit)<br>\$(dy4) – today’s year (4-digit)<br>\$(yd) – yesterday’s date (2-digit)<br>\$(ym) – yesterday’s month (2-digit)<br>\$(yy2) – yesterday’s year (2-digit)<br>\$(yy4) – yesterday’s year (4-digit)<br>\$(obs) – ObSys data folder<br>\$(doc) – User’s Documents folder | FN        | Obj\Text; Max 127 chars; Adjustable<br><br>Example values:<br>assets\data.xml<br>C:\Users\ABC\Downloads\Data.xml<br>\$(obs)\XML\Meter5_\$(dy4)\$(dm)\$(dd).xml |
| <b>Cache life (mins)</b><br>Once a file is loaded, it will be held in memory for the cache life duration before requiring a re-read. Refer to <i>Operation</i> .   | CL        | Obj\Num: 0...60; Adjustable  |

# XML Values

Object Type: [XmlRead v10]

The XML Values object contains data from up to 32 XML files, configured in the driver.

| Description  | Reference  | Type                                      |
|--|------------|---|
| <b>File x</b><br>The file number, <i>x</i> , can be in the range 1..32 | F <i>x</i> | Variable Container:<br>[XmlRead v10\File] |

## File

Object Type: [XmlRead v10\File]

An XML file contains a tree-like structure of element tags. The File object contains the root elements from the XML file.

| Description   | Reference  | Type   |
|---|------------|--|
| <b>Element</b><br>XML element. Where <i>Element</i> is the element tag name. The tag number, <i>a</i> , is in the range 1..65535. | O <i>a</i> | Variable Container:<br>[XmlRead v10\Element] |
| <b>Label</b><br>Filename configured in driver setup   | L          | Obj\Text                                     |

## Element

Object Type: [XmlRead v10\Element]

An XML element can contain a value, several attribute name-value pairs, and other element tags.

| Description  | Reference  | Type   |
|--|------------|--|
| <b>Value</b><br>Value of the element. Where <i>Value</i> is the element tag name.  | V          | Obj\Text; Max 127chars                       |
| <b>Attribute</b><br>XML attribute value. Where <i>Attribute</i> is the attribute tag name. The tag number, <i>a</i> , is the range 1..65535. | I <i>a</i> | Obj\Text; Max 127chars                       |
| <b>Element</b><br>XML element. Where <i>Element</i> is the element tag name. The tag number, <i>a</i> , is in the range 1..65535.            | O <i>a</i> | Variable Container:<br>[XmlRead v10/Element] |



# Driver Versions

| Version | Build Date | Details         |
|---------|------------|-----------------|
| 1.0     | 15/03/2015 | Driver released |

## Next Steps...

If you require help, contact support on 01273 694422 or visit [www.northbt.com/support](http://www.northbt.com/support)



North Building Technologies Ltd  
+44 (0) 1273 694422  
[support@northbt.com](mailto:support@northbt.com)  
[www.northbt.com](http://www.northbt.com)

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Author: GS  
Checked by: JF

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