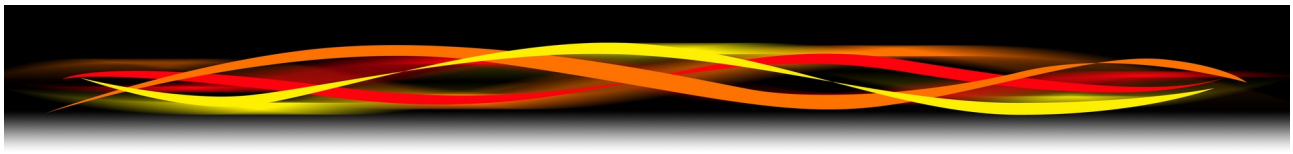
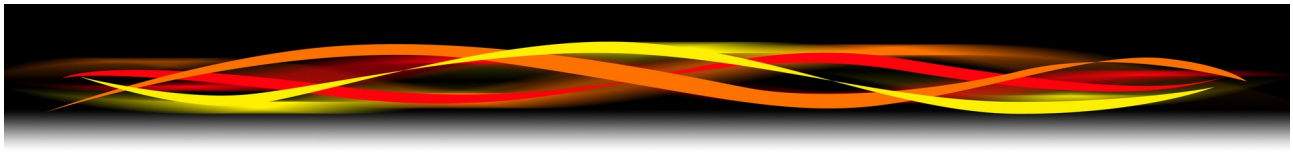


Newflow

NÅNO

XML Communications



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Document Information

Document Name: NÅNO XML Communication Manual
Document Identifier NF_XMLM

Table of Contents

1 History

31-May-2010	Rev0	Original
07-Jun-2010	Rev1	T.B.C.
21-Jun-2010	Rev2	T.B.C.
19-Jul-2010	Rev3	T.B.C.
26-Jul-2010	Rev4	T.B.C.
09-Aug-2010	Rev4	T.B.C.
02-Sep-2010	Rev5	T.B.C.
19-Sep-2010	Rev6	T.B.C.
01-Oct-2010	Rev7	Updated <Report_Index> and <Report> requests
09-Nov-2010	Rev8	Updated Display Tree for Screen ActiveId Added <Alarm_List> request
09-Nov-2010	Rev9	Updated Display Tree for Screen ActiveId and ActiveValue Updated <Application_Settings> example Added System Settings pin Id's Added ActiveId and ActiveValue tags Added "Accept" to the <Alarms> request
06-Jun-2011	Rev10	Added <Login> and <Logout> requests Added details on custom event log entries
07-Jun-2011	Rev11	Updated <Users> request Updated <Historical_Data> and <Add_Historical_Data> requests
10-Jun-2011	Rev12	Updated <Historical_Data> request
14-Dec-2011	Rev13	Corrected XML_Logging default to be Enabled and not Disabled as stated Added TOC to the Doc Updated <Report_Data> request to allow template info to be requested
23-Mar-2012	Rev14	Added read / write access levels to <Displays> request Added <Live_Displays> Added list of access levels to <Users> request
19-Sep-2012	Rev15	Updated report requests Added "StringSize" attribute Added checksums to <Identify> request Added "User" attribute to <Live_Data> and <Event_Log>/<Audit_Log> requests <Live_Data> strings can be specified in double quotes (")
19-Sep-2012	Rev16	Updated TOC
24-Apr-2013	Rev17	Fixed usage of "User" attribute Added <Audit_Log_Index> request Updated <Event_Log> and <Alarm_Log> requests
29-Jul-2014	Rev18	Removed deprecated requests Added missing requests Added "push" comms info Define date/time format Updated <Identify> request Updated <Network> request to remove Port 2 Gateway Updates <Time_Sync> request
07-Aug-2014	Rev19	Added TFX information
22-Dec-2014	Rev20	Updated <Historical_Data> request to add "Count" attribute Updated Push comms Remove deprecated 'Z' from end of timestamps
03-Mar-2015		Remove "Start_Date" and "End_Data" parameters
20-Aug-2015		Updated Event log polling to support extra event log types
22-Sep-2015		<Report_Index> now supports "Zone" query Added <Printers> information
11-Dec-2015		Added Appendix A – Example Polls/Responses Updated Poll/Responses to match latest firmware 4v2r0-6168 Updated Formatting/Style of Document
23-Dec-2015		Release of Rev20
25-Jul-2016	Rev21	Added "Set" attribute to <Alarms> request
11-Jan-2017		Added <Version_OS> value to <Identify> request Added "Live" id in <Report> request Added <Alarm_Log_Index> and <Event_Log_Index> requests Added <Report_Routing> request Added <Constants_Log> request
28-Feb-2017		Added "FTP" to <Report_Routing> request Added "FTP" to <Printers> request
21-Mar-2017		Added <ADC_Calibrate> request
25-May-2018		Added <Languages> request Added "Language" to <Request>
25-Jan-2019		Added "State" to <Alarms> request
17-Jul-2019		Added Pin IDs to <Identify> request

2 Notes

1. Depending on the features enabled or disabled in the application, displays and data points can be made Active or not. The Active Id and Active Value in the following documentation allows the supervisory computer to find which data points are active or not. The <Live_Displays> poll allows a supervisory computer to find if a complete menu branch or individual data point is not active and therefore to mask those settings or values out from it's displays. An example of this may be an installation not having Water Metering on the LACT-Pro™ application.
2. Report Id's are **not** designed to be unique across targets. They are only unique within any one zone. If a unique reference is required, the host should use, as an example, the System ID <Serial_Number> of the target **plus** the report Id **plus** the report zone.
3. Pin Id's are not static across applications therefore you must poll for the <Displays> or <Live_Displays> to associate the pins with their Id's whenever a different application is installed into the NÅNO.
4. <Item> elements may contain "ActiveId" and "ActiveValue" attributes. These can be used to determine if the item is currently active.
5. Standard date/time format is YYYY-MM-DDThh:mm:ss where:

YYYY	Year
MM	Month
DD	Day
hh	Hour
mm	Minute
ss	Second
T	Separator
-	Separator
:	Separator

6. Example Polls and Responses are detailed in Appendix A.

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3 Introduction

XML communications in the NÅNO allows systems to:

- Poll for the identity of the NÅNOs in the field
- Login and Logout of the NÅNOs in the field
- Read and write to the individual data items in the NÅNO by retrieving:
  - the active displays
  - all displays
- Read historical/trend data
- Read report data as:
  - plain text
  - raw data
  - encoded as Flow-Cal® TFX format (where configured, for example, LACT-Pro™)
- Read and accept alarms
- Read Alarm and Event logs
- Read and manage:
  - Users
  - Network settings
  - Printer settings and routing up to three printers, SD Card and FTP
  - Time, timezone and daylight saving settings

This interface is designed for use with a supervisory computer to allow data to be transferred to and retrieved from the NÅNO computer.

Although this interface can be a typical slave type link where a supervisory computer would routinely poll the NÅNO to see if anything had changed, it also has the facility to work in push mode. A description of this is given in the next section.

Using the additional push type communications to send the supervisory a change of status, allows lower data usage and is ideal for remote sites where permanent communication links are not present.

XML communications is an open standard, that allows for flexible communications between multiple machines. The remainder of this document is used to document the notifications when in 'push' mode and the polls and expected responses when in 'pull' mode.

Appendix A gives examples of full polls and responses, whereas the detail below only shows the minimal poll and response information, not the wrappers around them.

4 Push / Pull Communications

The XML communications can be split into two basic types:

"Pull" Comms

Here the NÅNO acts as a slave device and waits for a remote server to initiate the XML requests.

"Push" Comms

This is where the NÅNO unit acts as a master device, and remains idle until the application triggers a notification. The events that cause the trigger are:

1. An alarm changing state, that is:
   - Changing from not in alarm condition to being a new alarm (yet to be accepted)
   - Changing from a new alarm (not yet accepted) to an accepted alarm.
   - Changing from an accepted alarm to not in alarm condition.
   - Changing from a new alarm (not yet accepted) to not in alarm condition.
2. A report being generated – note the report does not need to be printed to trigger a push notification, generation is sufficient.

When the trigger is set, a single "status" packet is sent to the remote server.

The onus is then on the remote server to decide whether the new status information requires further action, and can start a "pull" communications request to retrieve the required information.

Examples of the polling cycle may be:

4.1 Example Pull Comms Polling sequence

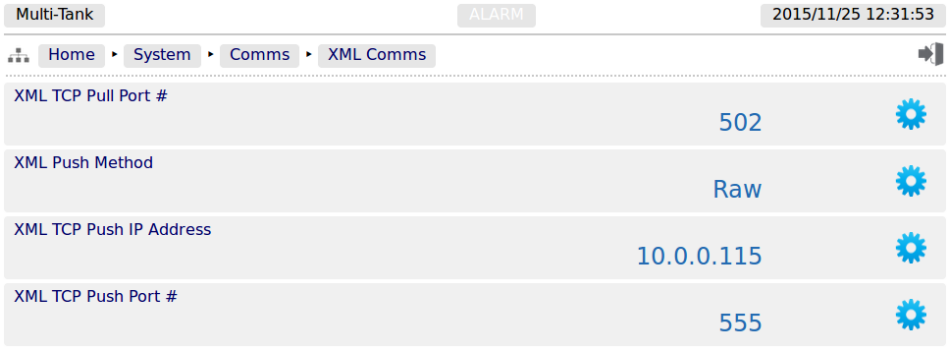
- Perform an Identify poll to verify the required unit is assigned to the requested IP Address
- Decode the Identify message to check if versions etc. have changed and whether the data references need relinking/resyncing
- Decode the Report_Index and Audit_Log_Index sections of the Identify message to check if any data needs retrieving
- If any data needs retrieving or resyncing, login to the unit
- If the Identify poll shows any versions have changed, poll for the displays to link name and pin references together (this should only be a one-off when the versions change)
- Poll for the current alarms
- Poll for any reports that have been generated since the last time the unit was connected
- Poll for the alarm and event logs
- Poll for historical/trending information
- ...
- ...
- Logout

4.2 Example Push Comms Polling sequence

- Receive a push notification
- Decode the Report_Index and Alarms information to see if any data needs retrieving (depending on requirements)
- Perform an Identify poll to verify the required unit is assigned to the requested IP Address
- Decode the Identify message to check if versions etc. have changed and whether the data references need relinking/resyncing
- Decode the Audit_Log_Index section of the Identify message to see if any events need retrieving (depending on requirements)
- If any data needs retrieving or resyncing, login to the unit
- If the Identify poll shows any versions have changed, poll for the displays to link name and pin references together (this should only be a one-off when the versions change)
- Poll for the current alarms
- Poll for any reports that have been generated since the last time the unit was connected
- Poll for the alarm and event logs
- Poll for historical/trending information
- ...
- ...
- Logout

5 Configuration

The Push IP Address, Port # and Method may be configured in the application, along with the Pull Port, however depending on the application this may be 'hard-coded' in the application and not changeable by the user. An example screen of the configuration is shown below:



The following details could be changeable:

XML TCP Pull Port #	The TCP/IP port number can be set to any number between 0 and 65535, but care must be taken in choosing the port number. We recommend the port number is left as 502, unless there is a good reason for changing it.
XML Push Method	Two "push" connection modes are possible: Raw – the target sends the status packet as raw XML data to the server HTTP – the target uses an HTTP POST request to send the status packet to http://<server>/notify
XML TCP Push IP Address	This is the TCP/IP address of the remote server which will receive the push notifications from the NÅNO.
XML TCP Push Port #	This is the TCP/IP port number of the remote server which will receive the push notifications from the NÅNO.

6 Push Comms format

The status packet consists of a <NotifyId> element, the standard response to the <Alarms> request and the standard response to the <Report_Index> request all wrapped in a <Notify> element, followed by an MD5 checksum:

```
<Notify>
 <NotifyId>1406561732.34</NotifyId>
 <Header>
  ...
 </Header>
 <Alarms>
  ...
 </Alarms>
 <Report_Index>
  ...
 </Report_Index>
</Notify>
<csum>...</csum>
```

The "NotifyId" item is a unique marker per notify packet. The first number (before the '.') gives the number of seconds since 01/01/1970 (based on the unit's current date/time setting). The second number (after the '.') increases with every notify packet sent and resets to '0' when power cycled or updated. This can be used to detect any lost packets, power cycles, updates to firmware/application, etc.

For example, successive NotifyId values may look like:

```
<NotifyId>1406561647.30</NotifyId>
<NotifyId>1406561682.31</NotifyId>
<NotifyId>1406561698.32</NotifyId>
<NotifyId>1406561711.33</NotifyId>
<NotifyId>1406561732.34</NotifyId>
```

7 Pull Comms request format

The basic "pull" XML request format is as follows:

Request

```
<Device_Report>
 <Request>
  <User>xxx</User>
  ...
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2014-07-18T15:18:01</Date>
  <Unit_Name>LACT MicroCube</Unit_Name>
  <Serial_Number>C8A03083A055</Serial_Number>
 </Header>
 <Request>
  ...
 </Request>
</Device_Report>
```

The poll contains a <Device_Report> and <Request> wrapper along with the user who is requesting the information and the individual request types.

The <Request> element may optionally contain a "Language" tag. This should contain the index of the language to be used for the request reply. If the language index is invalid, the base language will be used. To obtain a list of languages and indexes contained within the application, see the <Languages> request (11 <Languages> : List available langauges).

Multiple request types can be specified within a single <Request> element, and each will be processed in turn, with the reply data all being contained within a single reply message.

The reply contains a "header" section containing the following information:

<Date> Date stamp of the reply

<Unit_Name>	Unit name
<Serial_Number>	Unit serial number

8 <Identify> : Identification

This returns a list of various identification strings associated with the target, along with their relevant unique pin Id.

Apart from <Login>, this request is the only request that does not require the user to be logged in.

Currently the following strings are supported:

<Hostname>	The System ID/Device ID of the NÅNO
<Comment>	A user configurable comment field, the value is set in the Configure section of NANOconf
<Application>	Name of the installed application
<AppVersion>	Application version (date stamp)
<AppSetup>	Application DataSet in use
<AppChecksum>	Application checksum
<ConstantsChecksum>	Constants (Metrology level keypad inputs) checksum
<Version>	System Firmware version
<Altera>	The I/O Firmware version
<Version_OS>	Operating System version
<ExpansionCardDate>	The date the expansion board was calibrated.
<ExpansionCardIdent>	The expansion board serial number and calibration information.
<Uptime>	Shows time elapsed since last restart
<Serial_Number>	Target serial number (MAC address of Ethernet port 1)
<Link_Status_1>	Shows whether Ethernet port 1 is currently connected. Valid values are: Up - the physical link is connected and powered Down - the link is not Up
<IP_Address_1>	IP address for Ethernet port 1
<Link_Status_2>	Shows whether Ethernet port 2 is currently connected Valid values are: Up - the physical link is connected and powered Down - the link is not Up
<IP_Address_2>	IP address for Ethernet port 2
<Status>	Current system status, currently this is always 'Healthy'
<Report_Index>	As per an empty <Report_Index> request
<Audit_Log_Index>	As per an empty <Audit_Log_Index> request

Example:

Request

```
<Identify/>
```

Reply

```
<Identify>
  <Hostname Id="152">rtu1234-abcd</Hostname>
  <Comment Id="157">Acme Ltd</Comment>
  <Application Id="0">xml_test</Application>
  <AppVersion Id="6">5v3r13</AppVersion>
  <AppSetup Id="210">Base*</AppSetup>
  <AppChecksum Id="200">F9613E415AA293DF</AppChecksum>
  <ConstantsChecksum Id="202">C41B604E1C105F85</ConstantsChecksum>
  <Altera Id="158">HW 2.00 SW 2.05</Altera>
  <Version_OS Id="155">$.11.0</Version_OS>
  <ExpansionCardDate Id="153">14/12/02 14:34:23</ExpansionCardDate>
  <ExpansionCardIdent Id="154">1412302 83ZZ cal. post heat soa</ExpansionCardIdent>
  <Uptime Id="151">7 days, 04:49:59</Uptime>
  <Serial_Number Id="2">547E76156140</Serial_Number>
  <Link_Status_1 Id="127">Up</Link_Status_1>
  <IP_Address_1 Id="4">10.0.200.2</IP_Address_1>
  <Link_Status_2 Id="187">Down</Link_Status_2>
  <IP_Address_2 Id="5">192.168.2.67</IP_Address_2>
  <Status>Healthy</Status>
  <Report_Index>
...
...
  </Report_Index>
  <Audit_Log_Index>
...
...
  </Audit_Log_Index>
</Identify>
```

9 <Login> : User login

By default, no access to any part of the target is allowed unless the user has logged in. The only exception to this is the <Identify> request.

The <Login> request simply takes the pin code of the user (this can be up to 8 alphanumeric characters), checks it against the user database, and sends back a "Pass" or "Fail" reply.

NOTE: For compatibility across all platforms and data routes, it is advised to keep the password to containing 0-9, a-z and A-Z characters.

Example:

Request

```
<Login Name="operator" Code="12345678"/>
```

<Reply

```
<Login>Pass</Login>
```

10 <Logout> : User logout

This request logs out the current user, and sends back a reply of "Pass" (if there was a user logged in) or "Fail" (if no user was currently logged in).

Example:

Request

```
<Logout/>
```

Reply

```
<Logout>Pass</Logout>
```

11 <Languages> : List available langauges

This returns a list of the all available languages (and their associated indexes) defined within the application.

Example:

Request
`<Languages/>`
Reply

`<Languages>`
` <Item Index="0">English</Item>`
` <Item Index="1">Spanish</Item>`
` <Item Index="2">SYSTEM_TAGS</Item>`
`</Languages>`

12 <Displays> / <Live_Displays> : Display tree

This returns a list of the display tree, starting at the specified hierarchy level. If no hierarchy level is given, it is assumed to be the "top" level.

There are two displays capable of being returned, "Local" and "Remote".

The poll <Displays> tags can contain the following attribute:

Name	The name of the display requested.

Request
`<Displays Name="Local"/>`

If no Name is specified, the reply will default to the "Remote" displays.

The reply consists of a hierarchical list of <Menu>, <Screen> and <Item> tags.

<Menu> tags contain one or more of the following attributes:

Name	Menu name
ActiveId	Unique Id for determining if this menu is currently active
ActiveValue	Active value

<Screen> tags contain one or more of the following attributes:

Name	Menu name
ActiveId	Unique Id for determining if this screen is currently active
ActiveValue	Active value

<Item> tags contain one or more of the following attributes:

Name	Item name
Id	The unique Id for reading the value
ReadLevel	Read Access Level
Unit	The current item's units value
UnitId	The unique Id for reading the item's units value
ADP	Number of decimal places to display
ActiveId	Unique Id for determining if this item is currently active
ActiveValue	Active value
Type	Denotes the data type of the item. Possible types are: String, IP, DateTime, Double, Int, Unknown
AutoReset	Denotes if the item auto resets (to 'n' or an empty string) at the start of each application cycle
WriteId	The unique Id for writing the value (if item can be edited)
WriteLevel	Write Access Level

Table	A comma separated list of valid settings for the item
Attributes	Item attributes (content is application specific)
StringSize	Maximum string length (string items only)
Raw	Gives the raw hex IEEE754 value (double items only)

Any "system" menus contained within the display tree will create a <Request> entry, denoting an extra XML request needs to be performed to retrieve the relevant system data, as follows:

Alarm Logs	<Request Type="Alarm_Log_Index"/>
Constants Log	<Request Type="Constants_Log"/>
Event Logs	<Request Type="Event_Log_Index"/>
Live Report	<Request Type="Report" Name="<report name>"/>
Local Panel	<Request Type="Displays" Name="Local"/>
Network	<Request Type="Network"/>
Printers	<Request Type="Printers"/>
Report Routing	<Request Type="Report_Routing"/>
Reports Index	<Request Type="Report_Index"/>
System Info	<Request Type="Identify"/>
Time / Date	<Request Type="Time_Sync"/>
Trending	<Request Type="Historical_Index"/>
User Info	<Request Type="Users"/>

The <Live_Displays> request is identical to the <Displays> request, except that only "active" menus / screens / items are shown.

Example:

Request

```
<Displays>
  <Item Name="Setup"/>
</Displays>
```

Reply

```
<Displays>
  <Menu Name="Setup">
    <Screen Name="Prover_Constants">
      <Item Name="K_Type" Id="13342" ReadLevel="Anyone" Type="String" WriteId="10445" WriteLevel="Admin"
Table="BIDI,UNI,COMPACT"/>
      <Item Name="K_Dual_Chron" Id="1332" ReadLevel="Anyone" Type="Double" Unit="deg F" UnitId="54487"/>
    </Screen>
    <Screen Name="Bidi_Constants" ActiveId="10445" ActiveValue="BIDI">
      <Item Name="K_ID" Id="1333" ReadLevel="Anyone" Type="Double" WriteId="1333" WriteLevel="Admin"/>
      <Item Name="K_OD" Id="1334" ReadLevel="Anyone" Type="Double" WriteId="1334" WriteLevel="Admin"/>
      <Item Name="K_WT" Id="1335" ReadLevel="Anyone" Type="Double" WriteId="1335" WriteLevel="Admin"/>
    </Screen>
  </Menu>
</Displays>
```

13 <Alarm_List> : List of all system alarms

This returns a list of the all configured system alarms.

Example:

Request

```
<Alarm_List/>
```

Reply

```
<Alarm_List>
 <Item Name="Strainer Blocked" Id="142849"/>
 <Item Name="Totals Fault" Id="149535"/>
 <Item Name="Unallocated Flow Detected" Id="143317"/>
...
...
 <Item Name="S&amp;amp;W High" Id="126830"/>
 <Item Name="S&amp;amp;W Low" Id="126829"/>
 <Item Name="S&amp;amp;W Transmitter Fail" Id="126826"/>
 <Item Name="Water Temperature High" Id="148411"/>
 <Item Name="Water Temperature Low" Id="148410"/>
 <Item Name="Water Temperature Transmitter Fail" Id="148407"/>
</Alarm_List>
```

14 <Alarms> : System alarms

This returns a list of the current active system alarms. The date attribute shows when the alarm was last raised, and the Id attribute shows the alarm Id (as listed in the <Alarm_List> request above).

Example:

Request

```
<Alarms/>
```

Reply

```
 <Alarms>
  <Item Date="2015-12-02T04:09:47" Id="126826" Set="No" Accepted="No" State="2">S&amp;amp;W Transmitter Fail</Item>
  <Item Date="2015-12-02T04:09:47" Id="126886" Set="Yes" Accepted="Yes" State="5">Oil Pressure Transmitter Fail</Item>
  <Item Date="2015-12-02T04:09:47" Id="126949" Set="Yes" Accepted="No" State="7">Oil Temperature Transmitter Fail</Item>
 </Alarms>
```

The "state" value denotes the following:-

0	Alarm is not active
1	<not used>
2	Alarm has cleared but has not yet been accepted
3	<not used>
4	<not used>
5	Alarm has not cleared but has been accepted
6	Alarm has cleared but has not yet been accepted The alarm has gone active again, but has not been logged to prevent fleeting alarms
7	Alarm is set and has not yet been accepted

Alarms can also be accepted by sending an "Accept" to the relevant alarm Id. The reply will contain one of the following:

Invalid	The alarm was not found
Accepted	The alarm was accepted okay
Not accepted	The alarm was not currently active

Example:

Request

```
<Alarms>
  <Item Id="12">Accept</Item>
</Alarms>
```

Reply

```
<Alarms>
  <Item Id="12">Accepted</Item>
</Alarms>
```

15 <Report_Index> : Report index

This returns a list of all available reports in the historical archive.

Either a report name or a report zone may be specified.

If no tags are supplied, a list of the current report names (and the zone they are stored in) is returned, along with the report Id and date of the last report currently available.

Example:

Request

```
<Report_Index/>
```

Reply

```
<Report_Index>
  <Item Name="Hourly Report" Zone="1" Date="2012-04-05T15:00:00Z">12</Item>
  <Item Name="Daily Report" Zone="2">0</Item>
  <Item Name="Snapshot Report" Zone="99">0</Item>
</Report_Index>
```

The returned list consists of one report type per <Item> element, with the following attributes:

Name	The name of the report as displayed in the application and on the web interface.
Zone	The area of memory where the report is stored. A total of 16 separate zones exist in the NÅNO. Zones 1 to 6 hold 1500 reports in each, whereas Zones 7 to 15 hold 250 in each.
Date	Report date stamp.
Value	The Report Id number of the newest report generated (zero denotes no reports are available).

If the optional <Zone> attribute is specified, a list of all reports currently in that zone will be returned.

Example:

Request

```
<Report_Index>
  <Item Zone="7"/>
</Report_Index>
```

Reply

```
<Report_Index>
  <Item Zone="7">
    <Report Name="Metering Tech Report (Batch End)" Date="2015-09-22T04:44:27" Id="165"/>
    <Report Name="Metering Tech Report (Bias Adjust)" Date="2015-09-22T04:40:02" Id="164"/>
    <Report Name="Metering Tech Report (Bias Adjust)" Date="2015-09-22T04:35:50" Id="163"/>
    <Report Name="Metering Tech Report (Oil Prove)" Date="2015-09-22T04:34:47" Id="162"/>
    <Report Name="Metering Tech Report (Bias Adjust)" Date="2015-09-22T04:34:30" Id="161"/>
  </Item>
</Report_Index>
```

Polling for an individual report type, such as 'Daily Report', returns a list consisting of one <Item> element per requested report, each element containing the following attributes:

Date	Report date stamp
Id	Report Id number (zero denotes no reports are available)

The optional <StartId> and <Count> tags may be used to limit the index.Example:

Request

```
<Report_Index>
  <Item Name="Daily Report" StartId="243" Count="3"/>
</Report_Index>
```

Reply

```
<Report_Index>
  <Item Name="Daily Report">
    <Report Date="2010-06-09T01:00:00Z" Id="245"/>
    <Report Date="2010-06-08T01:00:00Z" Id="244"/>
    <Report Date="2010-06-07T01:00:00Z" Id="243"/>
  </Item>
</Report_Index>
```

16 <Report_Data> : Data from archived report

This returns the unformatted historical report data for the report specified using the relevant report tag e.g. "Daily Report" with the required report Id as its value e.g. "245".

Report Id's can be specified in 2 ways:

1. Single report using the "Id" attribute.
2. Multiple reports using "StartId" and "Count" attributes.

If a report Id is not specified, the report "template" is returned, which specifies the index of each item on the report, along with it's name and type (plus any attributes specific to that type of data), rather than the item value itself.

"Live" screen reports can be retrieved by setting the Id value to "Live".

Each report item may also show the following attributes:

Index	the unique reference of the item in that report.
ADP	"After Decimal Point" value
Unit	The text value of the specified unit
Raw	The raw Hex value if the Type is a Double (in IEEE 754 format)
Value	The value at the time that the report was generated.

Example:

Request

```
<Report_Data>
 <Item Name="Hourly Report" Id="868"/>
</Report_Data>
```

Reply

```
<Report_Data>
 <Item Name="Hourly Report" Id="868" Date="2015-12-11T03:41:42">
  <Item Index="1" Raw="0x3B002A29030A0B73">2015/12/11 03:41:42</Item>
  <Item Index="2">Newflow Ltd</Item>
  <Item Index="3">Demo Unit</Item>
  <Item Index="4">HQ</Item>
  <Item Index="5">Gas Differential Pressure Unit</Item>
  <Item Index="6" ADP="0" Raw="0x3B002A29030A0B73">2015/12/11 03:41:42</Item>
  <Item Index="7" ADP="0" Raw="0x0000000000000000">0</Item>
  <Item Index="8">tonnes</Item>
  <Item Index="9" ADP="0" Raw="0x0000000000000000">0</Item>
  <Item Index="10">GJ</Item>
  <Item Index="11" ADP="0" Raw="0x0000000000000000">0</Item>
  <Item Index="12">m³</Item>
  <Item Index="13" ADP="0" Raw="0x0000000000000000">0</Item>
  <Item Index="14">kSm³</Item>
 </Item>
</Report_Data>
```

Example of a template:

Request

```
<Report_Data>
 <Item Name="Daily Report"/>
</Report_Data>
```

Reply

```
<Report_Data>
 <Item Name="Daily Report">
  <Item Index="1" Name="Report Time/Datestamp" Tag="Report Time/Date" Type="DateTime"/>
  <Item Index="2" Name="Company Name" Tag="Company Name" Type="String"/>
  <Item Index="3" Name="Device ID" Tag="Device ID" Type="String"/>
  <Item Index="4" Name="Oil Flow Meter ID" Tag="Meter ID" Type="String"/>
  <Item Index="5" Name="Comment" Tag="Comment" Type="String"/>
  <Item Index="6" Name="Previous Triggered Sequence Number" Tag="Daily Report #" Type="Int"/>
  <Item Index="7" Name="Transaction #" Tag="Last Transaction #" Type="Int"/>
  <Item Index="8" Name="Lease Location" Tag="LACT Lease Location - Fixed" Type="String"/>
  <Item Index="9" Name="Offload Location" Tag="ACT Offload Location - Fixed" Type="String"/>
  <Item Index="10" Name="Previous Day Opening Cumulative [IV]" Tag="Opening IV Cumulative Total" Type="Double"/>
  <Item Index="11" Name="Gvol Unit" Tag="Opening IV Cumulative Unit" Type="String"/>
  <Item Index="12" Name="Previous Day Opening Cumulative [GOV]" Tag="Opening GOV Cumulative Total" Type="Double"/>
  <Item Index="13" Name="Gvol Unit" Tag="Opening GOV Cumulative Unit" Type="String"/>
  <Item Index="14" Name="Previous Day Closing Cumulative [IV]" Tag="Closing IV Cumulative Total" Type="Double"/>
  <Item Index="15" Name="Gvol Unit" Tag="Closing IV Cumulative Unit" Type="String"/>
  <Item Index="16" Name="Previous Day Closing Cumulative [GOV]" Tag="Closing GOV Cumulative Total" Type="Double"/>
  <Item Index="17" Name="Gvol Unit" Tag="Closing GOV Cumulative Unit" Type="String"/>
 </Item>
</Report_Data>
```

The template returns all possible indexes of the requested report. The actual data returned for a given report Id may or may not include all indexes as only indexes that are active are included.

As individual indexes and/or whole lines of the report (which may include multiple indexes) can be marked as active or not active, this information is not provided in the XML reply for the template.

If configured, reports can be extracted in FlowCal TFX format (binary data is encoded as Base64 wrapped in a CDATA block) by using the optional Format="TFX" tag.

Example:

Request

```
<Report_Data>
 <Item Format="TFX" Name="Bill Of Lading" Id="267"/>
</Report_Data>
```

Reply

```
<Report_Data>
 <Item Name="Bill Of Lading" Id="267" Date="2015-12-02T05:28:42"><![CDATA[RGVmYXVsdAAAAAAAAA...AAAAAAAA]]></Item>
</Report_Data>
```

17 <Report> : Archive report

This returns the formatted historical report specified using the relevant report tag with the optional report Id as its value.

If a report Id is not specified, the report "template" is returned, which specifies the index of each item on the report, along with it's name and type (plus any attributes specific to that type of data), rather than the item value itself. For details of this, see section 16 <Report_Data> : Data from archived report.

Report Id's can be specified in 2 ways:

1. Single report using the "Id" attribute.
2. Multiple reports using "StartId" and "Count" attributes.

"Live" screen reports can be retrieved by setting the Id value to "Live".

Example:

Request

```
<Report>
  <Item Name="Hourly Report" Id="1334"/>
  <Item Name="Daily Report" Id="6"/>
</Report>
```

Reply

```
<Report>
  <Item Name="Hourly Report" Id="1334">Invalid Id</Item>
  <Item Name="Daily Report" Id="6">
Prover Report                                                09/06/2010 14:08:00
================================================================================
Computer ID :                                          Report Number : 0000
Location :
================================================================================
Prove Data :
Diameter cm.:    00000.00  Wall Thick cm : 00000.00  Elasticity:      00000000
Cubic Exp :     0.0000000  Table Selected: AAAAAAAA  Product Name :   AAAAAAAA
================================================================================
Meter Data :
Serial Number: AAAAAAAA    Meter ID  : AAAAAAAA
Meter Size   : AAAAAAAA  Meter Model : AAAAAAAA  Total m3   :   00000000.0
================================================================================
Previous M.F.:  0.0000  @ m3/hr   :      0.0  Date :   /  /    Time :   :  :
================================================================================
Data From Consecutive Prove Runs:
Run   Pulse Counts Temperature Deg.C  Pressure kPa    Flowrate Density   Meter
    Forward  Total  Prover   Meter  Prover    Meter    m3/hr   @ 15C    Factor
01        0       0    0.00    0.00    0.00     0.00                   0.000000
02        0       0    0.00    0.00    0.00     0.00                   0.000000
03        0       0    0.00    0.00    0.00     0.00                   0.000000
04        0       0    0.00    0.00    0.00     0.00                   0.000000
05        0       0    0.00    0.00    0.00     0.00                   0.000000
Averages          0    0.00    0.00    0.00     0.00                   0.000000

Average K Factor Pulses/m3  :       0.000
Maximum M.F.Deviation Between Runs  0.000%
  </Item>
</Report>
```

18 <Audit_Log_Index> : Audit log index

This returns a list of all available audit types (Alarms and Events), along with the Id of the last log item currently available for each particular audit type.

This can be used to quickly determined if any new alarm or event items have been stored on the target.

Example:

Request

```
<Audit_Log_Index/>
```

Reply

```
<Audit_Log_Index>
  <Item Type="Alarm">544</Item>
  <Item Type="System">418</Item>
  <Item Type="Operator">3428</Item>
  <Item Type="Metrology">230</Item>
  <Item Type="Security">631</Item>
  <Item Type="Application">2</Item>
</Audit_Log_Index>
```

19 <Alarm_Log_Index> : Alarm log index

This behaves as per the <Audit_Log_Index> but only returns the "alarm" information.

Example:

Request

```
<Alarm_Log_Index/>
```

Reply

```
<Alarm_Log_Index>
  <Item Type="Alarm">544</Item>
</Alarm_Log_Index>
```

20 <Event_Log_Index> : Event log index

This behaves as per the <Audit_Log_Index> but only returns the "event" information.

Example:

Request

```
<Event_Log_Index/>
```

Reply

```
<Event_Log_Index>
  <Item Type="System">418</Item>
  <Item Type="Operator">3428</Item>
  <Item Type="Metrology">230</Item>
  <Item Type="Security">631</Item>
  <Item Type="Application">2</Item>
</Event_Log_Index>
```

21 <Event_Log> : Event audit trail

This returns a list of the event audit trail.

Specific items can be requested in 2 ways:

1. Single report using the "Id" attribute.
2. Multiple reports using "StartId" and (optional) "Count" attributes.

There are multiple event "types" supported by the unit, so an optional "Type" attribute can be used

to specify which list of events to retrieve. Valid types are as follows:

System	Firmware, Application, Restart, Time/Date, Network, Printer
Operator	Operator entered database changes
Metrology	"Metrology" constants, calibration
Security	User login, logout, add, remove, etc.
Application	Application generated events (e.g. for debugging purposes)

Each type stores at least 1000 items before wrapping, so this request could generate a large amount of data. Unless overwritten using the "Count" attribute, the reply is limited to a maximum of 60 items.

If a blank request is made, the last 60 System event log items stored on the target will be returned.

Example:

Request

```
<Event_Log Type="System"/>
```

Reply

```
<Event_Log>
 <Item Id="375" Date="2015-12-04T10:32:08" Type="System">System Restart Warm Start</Item>
 <Item Id="374" Date="2015-12-03T04:19:12" Type="System" User="Joe Public">Printer 3 Network Address changed to 10.0.0.11</Item>
 <Item Id="373" Date="2015-12-02T08:30:20" Type="System">System Restart Warm Start</Item>
 <Item Id="372" Date="2015-12-02T08:30:19" Type="System" User="Fred Bloggs">Remote user admin installed Firmware 4v1r1</Item>
 <Item Id="371" Date="2015-11-23T14:45:17" Type="System" User="admin">TimeZone / Offset changed to Central</Item>
 <Item Id="370" Date="2015-11-19T11:25:20" Type="System" User="admin">SD Card: Installed</Item>
 <Item Id="369" Date="2015-11-19T11:24:35" Type="System" User="admin">SD Card: Removed</Item>
 <Item Id="368" Date="2015-11-18T16:09:47" Type="System" User="admin">Printer 1 Serial Port changed to COM1 - RS232</Item>
 <Item Id="367" Date="2015-11-18T05:16:31" Type="System" User="admin">NTP Automatic Sync changed to Enabled</Item>
 <Item Id="366" Date="2015-11-18T05:01:10" Type="System" User="admin">NTP: Time adjusted : +3.277086 seconds</Item>
 <Item Id="365" Date="2015-11-18T05:01:10" Type="System" User="admin">NTP: Manual Sync</Item>
 <Item Id="364" Date="2015-11-18T05:01:04" Type="System" User="admin">NTP Server IP Address changed to 198.60.73.8</Item>
 <Item Id="363" Date="2015-11-17T11:31:07" Type="System" User="admin">TimeZone / Offset changed to Central</Item>
 <Item Id="362" Date="2015-11-11T09:12:45" Type="System">SD Card: Inserted (S/N 330662B4)</Item>
 <Item Id="361" Date="2015-11-11T08:23:01" Type="System">SD Card: Ejected</Item>
 <Item Id="360" Date="2015-11-11T08:10:25" Type="System">System Restart Warm Start</Item>
</Event_Log>
```

22 <Alarm_Log> : Alarm audit trail

This returns a list of the alarm audit trail.

Specific items can be requested in 2 ways:

1. Single report using the "Id" attribute.
2. Multiple reports using "StartId" and (optional) "Count" attributes.

The alarm log stores at least 1000 items before wrapping, so this request could generate a large amount of data. Unless overwritten using the "Count" attribute, the reply is limited to a maximum of 60 items.

If a blank request is made, the last 60 alarm log items stored on the target will be returned.

Example:

Request

```
<Alarm_Log/>
```

Reply

```
<Alarm_Log>
  <Item Id="544" Date="2010-06-07T16:23:02Z" Type="Alarm" User="Fred Flintstone">Pressure High Accepted</Item>
  <Item Id="543" Date="2010-06-07T15:34:42Z" Type="Alarm" User="Fred Flintstone">Pressure High Set</Item>
</Alarm_Log>
```

23 <Constants_Log> : Constants log report

This poll returns a list of the current application "configuration".

The following information is included:

- System information
- Application information
- Operator configured values

The actual information contained in the report will vary according to the application layout.

Example:

Request

```
<Constants_Log/>
```

Reply

```
<Constants_Log>Constants Log generated at 2017/01/16 00:09:51

NOTE : Items Marked [CSUM] Are Included In The Metrology Checksum

[System Information]
System ID                                                C8A030839237
System Version                              4v5.7-6691 (HW 2.00 SW 2.05)
System O/S                                                      4.1.0
Application Name                                  LACT-Pro Tank App 0v8
Application Version                                            0v8r42
Application Setup                                                Base
Application Checksum                                  01FB3C2960A0880C
Metrology Checksum                                    0000000000000000
------------------------------------------------------------------------

[Menu : System|Initial App Setup]
Flow Direction                                          Truck Loading

[Menu : System|Initial App Setup|Site/Location Setup]
Company Name
Device ID                                             LACT-Pro Tank App
Comment/FMP #
Lease Location
Security Mode                                               No Security
...
...
...
[INACTIVE] [Menu : System|I/O|Assignment/Settings - Analog Inputs|Auxiliary Input 6 Setup]
Auxiliary Input 6 - Description                        Auxiliary Input 6
Auxiliary Input 6 - 4mA Scale                                  0.0000 %
Auxiliary Input 6 - 20mA Scale                               100.0000 %
Auxiliary Input 6 - Unit                                             %
Auxiliary Input 6 - Bias                                     0.0000 %

[Menu : System|I/O|Field Calibration]
Analog Input 1                                                Default
Analog Input 2                                                Default
Analog Input 3                                                Default
Analog Input 4                                                Default
Analog Input 5                                                Default
RTD Input 1                                                   Default

----------------------- END OF CONSTANTS LOG -----------------------
</Constants_Log>
```

24 <Historical_Index> : Historical Index

A poll will return the Id of the last item currently available for each particular zone along with the associated time/date.

The following items are supported:

Zone	Valid values are 1, 2 or 3.
Date	The local time/date when the last snapshot was taken.
Value	The Id of the last snapshot taken.

Example:

Request

```
<Historical_Index/>
```

Reply

```
<Historical_Index>
 <Item Zone="1" Date="2015-12-02T07:27:13">49220</Item>
 <Item Zone="2" Date="2015-12-02T09:10:28">5354</Item>
 <Item Zone="3" Date="2015-12-02T07:27:13">63</Item>
</Historical_Index>
```

25 <Historical_Data> : Historical data

Three zones are provided (Zone 1, 2 and 3), with 13 data points, known as slots, in each zone. The required zone is specified using the "Zone" attribute - by default, if no zone is specified, Zone 1 will be returned. The data point in each slot is defined via the application.

A poll will return the current slot usage for the requested zone and, optionally, using the <Data> tag detailed below, the current values of all the slots.

Use the optional <Data> tag to obtain the values in the reply, which will return a list of each date stamp in turn, along with the slot values for that date stamp (in CSV format). This will be in reverse order.

Any unused slots will be shown as "Unused".

Each Zone stores over 20,000 records, therefore if storing a record each minute (this interval is set in the application) will give over 2 weeks worth of data, so this request could generate a huge amount of data. Therefore, unless overwritten using the "Count" attribute, the reply is limited to a maximum of 60 records.

Specific items can be requested in 2 ways:

1. Single report using the "Id" attribute.
2. Multiple reports using "StartId" and (optional) "Count" attributes.

Example 1:

Request

```
<Historical_Data/>
```

Reply

```
<Historical_Data Zone="1">
 <Slots>126882,126945,126822,136360,146836,144051,144052,144053,144054,147350_2,148401,143790_2,143774</Slots>
</Historical_Data>
```

Example 2 (polling for different Zone):

Request

```
<Historical_Data Zone="2"/>
```

Reply

```
<Historical_Data Zone="2">
 <Slots>126882,126945,126822,136360,146836,144051,144052,144053,144054,147350_2,148401,143790_2,143774</Slots>
</Historical_Data>
```

Example 3 (polling with <Data> tag):

Request

```
<Historical_Data>
  <Data/>
</Historical_Data>
```

Reply

```
<Historical_Data Zone="1">
 <Slots>126882,126945,126822,136360,146836,144051,144052,144053,144054,147350_2,148401,143790_2,143774</Slots>
 <Value Id="5286" Date="2015-12-02T10:45:00">145,0,0,0,0,-23,-22.7212563248642,-24,-24.9063419724251,0,60,0,0</Value>
 <Value Id="5285" Date="2015-12-02T10:40:00">145,0,0,0,0,-23,-22.7219082332858,-24,-24.9059302887874,0,60,0,0</Value>
 <Value Id="5284" Date="2015-12-02T10:35:00">145,0,0,0,0,-23,-22.7219940107097,-24,-24.9067536560628,0,60,0,0</Value>
 <Value Id="5283" Date="2015-12-02T10:30:00">145,0,0,0,0,-23,-22.7214621906816,-24,-24.9041634798423,0,60,0,0</Value>
 <Value Id="5282" Date="2015-12-02T10:25:00">145,0,0,0,0,-23,-22.7221827210423,-24,-24.9032714986273,0,60,0,0</Value>
 <Value Id="5281" Date="2015-12-02T10:20:00">145,0,0,0,0,-23,-22.7210333035621,-24,-24.9034773404461,0,60,0,0</Value>
 <Value Id="5280" Date="2015-12-02T10:15:00">145,0,0,0,0,-23,-22.7216680564989,-24,-24.9042320937819,0,60,0,0</Value>
 <Value Id="5279" Date="2015-12-02T10:10:00">145,0,0,0,0,-23,-22.7217538339228,-24,-24.9065135072741,0,60,0,0</Value>
 <Value Id="5278" Date="2015-12-02T10:05:00">145,0,0,0,0,-23,-22.7223714313749,-24,-24.9044036286309,0,60,0,0</Value>
 <Value Id="5277" Date="2015-12-02T10:00:13">145,0,0,0,0,-23,-22.7215651235902,-24,-24.9071138792458,0,60,0,0</Value>
 <Value Id="5276" Date="2015-12-02T09:55:00">145,0,0,0,0,-23,-22.7218396113467,-24,-24.9054328377252,0,60,0,0</Value>
 <Value Id="5275" Date="2015-12-02T09:54:03">145,0,0,0,0,-23,-22.7217195229533,-24,-24.9044207821159,0,0,0,0</Value>
</Historical_Data>
```

26 <Live_Data> : Read / Write real-time data

This will allow values to be read from or written to any of the specified data points.

The following items are supported:

Id	The unique pin Id of the data point
Logging	If set to Disabled, the change will not be logged to the event log.

Currently the following <...> tags in replies are supported:

<Id>	The unique pin Id of the data point
<Unit>	Only published if the data point has a unit assigned to it. (including data points where the unit name is looked up from another data point in the application). This is the text value of the unit in use at the time of polling.
<UnitId>	Only published if the data point has a looked up unit assigned to it. This is the unique pin Id of the data point used to lookup the unit value
<Raw>	Only published if the data point is a "Double" type and holds the raw hex value (in IEEE 754 format).

The data points are specified by the unique pin Id value (as provided by the <Displays> or <Live_Displays> request). To derive the possible values of pins that have a look up table assigned to them, this again should be parsed from the <Displays> or <Live_Displays> request.

If no value is supplied in the request message, the current value of the data point is returned.

If no Id is supplied in the request message, a list of all Id's (From the Local and Remote Displays) and their the current values are returned.

If a new value is specified, the data point is set to the new value, and this new value is returned in the reply message. By default, any changes made via the XML link will be logged to the relevant Event Log.

On a per request basis, a change can be inhibited from being entered onto the relevant event log by using the optional "Logging" attribute and setting it to "Disabled".

If writing a value, the following applies:

Type	Comment

Int	Value can be written as an int or double value. NOTE: If you write a double such as 10.2, the response will still return 10.2, although the value written to the database will only be the integer part. If polled separately the value 10 will be returned
Double	Can be written as a double or integer value. As an example, if you write an int such as 10, the response will return 10. If no fixed decimal place count is specified then a separate poll will return 10 or with the required decimal places if fixed, for example 10.000 if fixed to 3 decimal places
String	Can be written as "Hello", Hello or if the string is "Hello", then as ""Hello"" as it will remove the first and last character if they are "s. If an empty string is required, as an example to clear down a text field, "" can be used.

Example:

From Displays poll:

```
...
...
<Item Name="Application Type" Id="131237" ReadLevel="Anyone" Type="String" WriteId="131237" WriteLevel="Admin"
Table="LACT (Loading),ACT (Offloading)">LACT (Loading)</Item>
<Item Name="Company Name" Id="146734" ReadLevel="Anyone" Type="String" WriteId="146734" WriteLevel="Admin"
StringSize="32">Acme Inc</Item>
<Item Name="Oil Flow Meter K Factor" Id="130184" Unit="pulses/bbl" UnitId="126577" Type="Double" WriteId="130184"
WriteLevel="Admin" Raw="0x4097700000000000">1500</Item>
<Item Name="Prev_Good" Id="135518" ReadLevel="Anyone" Type="Int">0</Item>
...
...
```

Id	Description
131237	Integer with lookup table
146734	String
130184	Double with lookup table for units
135518	Integer with no lookups for units or value

Poll for data:

Request

```
  <Live_Data>
   <Item Id="131237"/>
   <Item Id="146734"/>
   <Item Id="130184"/>
   <Item Id="135518"/>
  </Live_Data>
```

Reply

```
 <Live_Data>
  <Item Id="131237">LACT (Loading)</Item>
  <Item Id="146734">Acme Inc</Item>
  <Item Id="130184" Unit="pulses/bbl" UnitId="126577" Raw="0x4097700000000000">1500</Item>
  <Item Id="135518">0</Item>
 </Live_Data>
```

Poll to write data – Example 1 (change will be logged into the event log):

Request

```
<Live_Data>
  <Item Id="136933">60</Item>
</Live_Data>
```

Reply

```
<Live_Data>
  <Item Id="136933">60</Item>
</Live_Data>
```

Poll to write data – Example 2 (change will NOT be logged into the event log):

Request

```
<Live_Data Logging="Disabled">
  <Item Id="136933">60</Item>
</Live_Data>
```

Reply

```
<Live_Data>
  <Item Id="136933">60</Item>
</Live_Data>
```

27 <Time_Sync> : Time sync

This allows the host to synchronise time and date with the target, and will support times based on UTC plus a time zone hour/minute offset. When enabled, an NTP request will be sent at 3.33am (plus a random number of seconds past the minute).

The following items are supported:

NTP	Enable / disable time syncing.
NTP Server	Specifies the IP address of the NTP time server.
Time	Sets the current time / date of the target.
Time Offset	Specifies the target's time offset from UTC (in ±HH:MM format)
Date Format	Specifies the date format used when viewing dates locally on the target (e.g. front panel or website).
DST Start Date	Sets the date (month and day) to start DST.
DST End Date	Sets the date (month and day) to end DST.
DST Hour	Sets the hour at which for switch DST.

If no items are specified, the current settings are put in the reply.

Example:

Request

```
<Time_Sync/>
```

Reply

```
<Time_Sync>
 <Item Name="NTP" Id="138" Type="String" WriteId="138" Table="Disabled,Enabled">Disabled</Item>
 <Item Name="NTP Server" Id="139" Type="IP" WriteId="139" ActiveId="138" ActiveValue="Enabled"></Item>
 <Item Name="Time" Id="144" Type="DateTime" WriteId="144">2015-12-02T10:51:38</Item>
 <Item Name="Time Offset" Id="141" Type="String" WriteId="141">-07:00</Item>
 <Item Name="Date Format" Id="130" Type="String" WriteId="130"
Table="YYYY/MM/DD,DD/MM/YYYY,MM/DD/YYYY">YYYY/MM/DD</Item>
 <Item Name="DST Start Date" Id="134" Type="String" WriteId="134">10/31</Item>
 <Item Name="DST End Date" Id="135" Type="String" WriteId="135">03/30</Item>
 <Item Name="DST Hour" Id="136" Type="String" WriteId="136" Table="01:00,02:00">02:00</Item>
</Time_Sync>
```

Regardless of whether TimeZones have been configured in the application or not, the method for changing the offset is specified in the XML communications by using the format ±HH:MM. If a matching TimeZone name (to the entered value) is found on the NÅNO, the displayed TimeZone will be shown on the web interface as well as the entered offset value. If no match is found, the TimeZone on the NÅNO will be shown as 'Unknown'.

Example:

Request

```
<Time_Sync>
  <Item Id="141">-05:00</Item>
</Time_Sync>
```

Reply

```
<Time_Sync>
  <Item Id="141">-05:00</Item>
</Time_Sync>
```

28 <Network> : Network information

This allows the host to retrieve and define the target network settings.

An empty request returns the current settings.

Example:

Request

```
<Network/>
```

Reply

```
<Network>
 <Item Port="1">
  <Item Name="Method" Id="100" Type="String" WriteId="100" Table="DHCP,Static">Static</Item>
  <Item Name="Address" Id="4" Type="IP" WriteId="4">10.0.150.3</Item>
  <Item Name="Netmask" Id="114" Type="IP" WriteId="114">255.255.0.0</Item>
  <Item Name="Gateway" Id="120" Type="IP" WriteId="120">10.0.0.1</Item>
 </Item>
 <Item Port="2">
  <Item Name="Method" Id="105" Type="String" WriteId="105" Table="Off,Static">Static</Item>
  <Item Name="Address" Id="5" Type="IP" WriteId="5">10.250.250.250</Item>
  <Item Name="Netmask" Id="117" Type="IP" WriteId="117">255.255.255.0</Item>
 </Item>
</Network>
```

The network settings can also be changed as follows:

Method	For Port 1, either DHCP or Static For Port 2, either Static or Off
Address	Sets the IP address (ignored if DHCP is in use)
Netmask	Sets the netmask (ignored if DHCP is in use)
Gateway	Sets the gateway address (ignored if DHCP is in use, and only applicable to Port 1)

Example 1:

Request

```
<Network>
  <Item Id="100">DHCP</Item>
</Network>
```

Reply

```
 <Network>
  <Item Id="100">DHCP</Item>
 </Network>
```

29 <Printers> : Printer information

This allows the host to retrieve and define the target printers settings.

An empty request returns the current printer settings.

Example:

Request

```
<Printers/>
```

Reply

```
<Printers>
 <Item Index="1">
  <Item Name="Method" Id="300" Type="String" WriteId="300" Table="None,Network (Postscript),Serial (Codepage 437)">Serial (Codepage
437)</Item>
  <Item Name="Name" Id="310" Type="String" WriteId="310">Printer 1</Item>
  <Item Name="Serial Port" Id="301" Type="String" WriteId="301" ActiveId="300" ActiveValue="Serial" Table="None,COM1 - RS232,COM3 -
RS422 using RS422/232 Converter">None</Item>
  <Item Name="Serial Baud" Id="303" Type="String" WriteId="303" ActiveId="300" ActiveValue="Serial">19200</Item>
  <Item Name="Network Address" Id="302" Type="IP" WriteId="302" ActiveId="300" ActiveValue="Network"></Item>
  <Item Name="Network Port" Id="304" Type="Int" WriteId="304" ActiveId="300" ActiveValue="Network">9100</Item>
 </Item>
 <Item Index="2">
  <Item Name="Method" Id="320" Type="String" WriteId="320" Table="None,Network (Postscript)">Network (Postscript)</Item>
  <Item Name="Name" Id="330" Type="String" WriteId="330">Printer 2</Item>
  <Item Name="Network Address" Id="322" Type="IP" WriteId="322" ActiveId="320" ActiveValue="Network">10.0.0.11</Item>
  <Item Name="Network Port" Id="324" Type="Int" WriteId="324" ActiveId="320" ActiveValue="Network">9100</Item>
 </Item>
 <Item Index="3">
  <Item Name="Method" Id="340" Type="String" WriteId="340" Table="None,Network (Postscript)">None</Item>
  <Item Name="Name" Id="350" Type="String" WriteId="350">Printer 3</Item>
  <Item Name="Network Address" Id="342" Type="IP" WriteId="342" ActiveId="340" ActiveValue="Network"></Item>
  <Item Name="Network Port" Id="344" Type="Int" WriteId="344" ActiveId="340" ActiveValue="Network">9100</Item>
 </Item>
 <Item Index="FTP">
  <Item Name="Network Address" Id="222" Type="IP" WriteId="222">11.22.33.44</Item>
  <Item Name="Port" Id="223" Type="Int" WriteId="223">21</Item>
  <Item Name="Username" Id="224" Type="String" WriteId="224">bob</Item>
  <Item Name="Password" Id="225" Type="String" WriteId="225">********</Item>
  <Item Name="Upload Directory" Id="226" Type="String" WriteId="226">/tmp</Item>
  <Item Name="Upload Format" Id="227" Type="String" WriteId="227" Table="Plain Text,TSV">TSV</Item>
 </Item>
</Printers>
```

The printer settings can also be changed as follows:

Method	Note that serial printing is only supported on printer 1 Postscript printing is supported on all printers
Name	Sets the printer name
Serial Port	Sets the serial port (if applicable)
Serial Baud	Sets the serial baud rate (if applicable)
Network Address	Sets the IP address of the printer
Network Port	Sets the port number of the printer

Example (changing Printer 1 & 2 names, using Id's from the <Printers> poll):

Request

```
<Printers>
  <Item Id="310">Ticket</Item>
  <Item Id="330">Office</Item>
</Printers>
```

Reply

```
 <Printers>
  <Item Id="310">Ticket</Item>
  <Item Id="330">Office</Item>
 </Printers>
```

The FTP entries allow configuration of the FTP server that can be used to upload reports for off-site storage. The following settings can also be changed:

Network Address	Sets the IP address of the remote FTP server
Port	Sets the port number of the FTP server
Username	Sets the FTP login username
Password	Sets the FTP login password
Upload Directory	Sets the FTP directory to store the data
Upload Format	Sets the data format of the report when uploaded

The Upload Format currently supports either Plain Text (as if the report were printed), or TSV. When TSV format is chosen, the data is stored as three rows of TAB Separated Values, with each report placement occupying a column of data. The rows contain the following:

Row 1 Contains the report item name.

Row 2 Contains the report item value.

Row 3 Contains the report item units.

For example, the following TSV data shows the first five items in a report (the '→' symbol is used to indicate each TAB character):

```
SysTime→Load Status→Tank/Product Name→Fluid Indicated Volume Tank1→Tank 1 Level→...
02/28/2017 05:50:29→Tank Status→Tank 1→5877.87542498109→16.277939964918→...
→→→Litres→in→...
```

When the TSV is then imported into a spreadsheet, the following row and column data is created:

	A	B	C	D	E
1	SysTime	Load Status	Tank/Product Name	Fluid Indicated Volume Tank1	Tank 1 Level
2	02/28/2017 05:50:29	Tank Status	Tank 1	5877.8754249811	16.2779399649
3				Litres	in

30 <Report_Routing> : Report printer routing

If the target application contains reports, these can be individually routed to one (or more) specific printers.

The <Report_Routing> request allows the host to retrieve and define this report routing information used by the target.

The routing info is a comma separated list of printer indexes, "SDCard" (if the report is currently routed to be stored in the SDCard), and "FTP" (if the report is currently routed to be uploaded via FTP).

If a report is not routed to any device, the routing will show as "None".

An empty request returns a list of all reports, along with their current routing.

Example:

Request

```
<Report_Routing/>
```

Reply

```
<Report_Routing>
 <Item Name="Bill Of Lading - Full Report">None</Item>
 <Item Name="Bill Of Lading – Ticket">1,FTP</Item>
 <Item Name="Duplicate Report">1</Item>
 <Item Name="Daily Report">None</Item>
 <Item Name="Monthly Report">2</Item>
 <Item Name="Metering Tech (Fallback Analysis)">2</Item>
 <Item Name="Metering Tech (Bias Adjust)">2</Item>
 <Item Name="Snapshot">2,SDCard</Item>
 <Item Name="Tank 1 Strapping Table Report">1</Item>
 <Item Name="Tank 2 Strapping Table Report">1</Item>
 <Item Name="Tank 3 Strapping Table Report">1</Item>
 <Item Name="Tank 4 Strapping Table Report">1</Item>
 <Item Name="Tank 5 Strapping Table Report">1</Item>
 <Item Name="Tank 6 Strapping Table Report">1,3,SDCard</Item>
</Report_Routing>
```

A specific report can be requested using the Name element

Example:

Request

```
<Report_Routing>
 <Item Name="Daily Report"/>
</Report_Routing>
```

Reply

```
<Report_Routing>
 <Item Name="Daily Report">None</Item>
</Report_Routing>
```

The routing can be changed for a report by simply specifiying its name and new routing list (either a valid printer index, "SDCard", "FTP" or "None").

If the new routing information is valid, the new setting will be echoed back.

Example to set the routing list of a specific report:

Request

```
<Report_Routing>
 <Item Name="Daily Report">1,SDCard</Item>
 <Item Name="Monthly Report">7</Item>
</Report_Routing>
```

Reply

```
<Report_Routing>
 <Item Name="Daily Report">1,SDCard</Item>
 <Item Name="Monthly Report">Invalid</Item>
</Report_Routing>
```

31 <Users> : User information

This allows the host to retrieve and define the list of user accounts used by the target.

An empty request returns a list of possible security levels (as defined in the application) and a list of users, along with their current security level.

Example:

Request

```
<Users/>
```

Reply

```
<Users Levels="Metrology,Admin,Technician,Operator,Management,Anyone">
  <Item Name="admin" Level="Admin"/>
  <Item Name="steve" Level="Operator"/>
  <Item Name="fred" Level="Management"/>
</Users>
```

The required action can be specified for each user, as follows:

Add	Add a new user to the existing list
Delete	Delete the specified user from the existing list
Change	Change the specified user's name, password and/or level

NOTE : Future functions are as follows:

Replace	Replace the entire user list with the one specified

Note that there must be at least one user with Admin level privileges. Attempting to remove or change the final Admin user will fail. Similarly, any replacement list must contain at least one Admin user.

Example:

Request

```
<Users>
  <Item Name="tim">Delete</Item>
  <Item Name="brian" Level="Operator" Password="12345678">Add</Item>
  <Item Name="james" NewName="jim" Level="Admin">Change</Item>
</Users>
```

Reply

```
<Users>
  <Item Name="tim">User not found</Item>
  <Item Name="brian">Added</Item>
  <Item Name="james">Changed</Item>
</Users>
```

32 <ADC_Calibrate> : ADC Calibration

This allows the host to read the current values of each ADC/PRT channel and set the field calibration values for each channel.

An empty request returns the current channel readings, along with the 4 bit "flag" that is fed into the top-level SysFlags input into the application.

Example:

Request

```
<ADC_Calibrate/>
```

Reply

```
<ADC_Calibrate>
  <Item Id="160" Name="Analog Input 1">5.99117285528617</Item>
  <Item Id="161" Name="Analog Input 2" Default="Yes">10.8945482145352</Item>
  <Item Id="162" Name="Analog Input 3" Default="Yes">3.99155334330566</Item>
  <Item Id="163" Name="Analog Input 4" Default="Yes">10.8779990729278</Item>
  <Item Id="164" Name="Analog Input 5" Default="Yes">3.98763297893122</Item>
  <Item Id="165" Name="Analog Input 6" Default="Yes">0.485594223778896</Item>
  <Cal_Flags>10</Cal_Flags>
</ADC_Calibrate>
```

Each entry provides the Id for the channel, along with it's name and current value. The "Default" attribute is set when the channel is using the factory calibrated defaults.

To set new scalings, the following data must be provided:

Id	Which channel to apply the new settings to
New_Lo	New lo-scale value
Old_Lo	Associated un-scaled lo-scale value
New_Hi	New hi-scale value
Old_Hi	Associated un-scaled hi-scale value

Each channel can be reset to its default by setting each of the above values to "-1".

If any of the settings are missing or invalid, the reply will indicate as much.

Example:

(a) Change Analog Input 1 default scaling of 4-20mA to 0-100°C
(b) Send incomplete data for Analog Input 2
(c) Reset Analog Input 3 back to default scaling

Request

```
<ADC_Calibrate>
  <Item Id="160" New_Lo="0.0" Old_Lo="4.0" New_Hi="100.0" Old_Hi="20.0"/>
  <Item Id="161" New_Lo="0.0" Old_Lo="4.0"/>
  <Item Id="162" New_Lo="-1" Old_Lo="-1" New_Hi="-1" Old_Hi="-1"/>
</ADC_Calibrate>
```

Reply

```
<ADC_Calibrate>
  <Item Id="160"/>
  <Item Id="161">Invalid</Item>
  <Item Id="162"/>
</ADC_Calibrate>
```

33 Appendix A – Example Poll/Responses

33.1 Push Comms Format

Example 1:

Push Notification

```
<Notify>
 <NofityId>1448032938.34</NofityId>
 <Header>
  <Date>2015-11-20T15:22:18</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Alarms>
  <Item Date="2015-11-19T15:31:32" Id="142849" Accepted="Yes">Strainer Blocked</Item>
 </Alarms>
 <Report_Index>
  <Item Name="Bill Of Lading" Zone="5" Date="2015-11-20T15:22:18">294</Item>
  <Item Name="Snapshot" Zone="99">0</Item>
  <Item Name="Metering Tech (Sampler Can Pull)" Zone="2" Date="2015-11-10T16:44:29">42</Item>
  <Item Name="Duplicate Report" Zone="6">0</Item>
  <Item Name="Daily Report" Zone="3" Date="2015-11-20T06:00:00">278</Item>
  <Item Name="Metering Tech (Bias Adjust)" Zone="7">0</Item>
  <Item Name="Monthly Report" Zone="2" Date="2015-11-06T11:12:28">41</Item>
 </Report_Index>
</Notify>
<csum>c6c69958f9a483c54d16a90db866533e</csum>
```

Example 2:

Push Notification

```
<Notify>
 <NofityId>1448032939.35</NofityId>
 <Header>
  <Date>2015-11-20T15:22:19</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Alarms></Alarms>
 <Report_Index>
  <Item Name="Bill Of Lading" Zone="5" Date="2015-11-20T15:22:18">294</Item>
  <Item Name="Snapshot" Zone="99">0</Item>
  <Item Name="Metering Tech (Sampler Can Pull)" Zone="2" Date="2015-11-10T16:44:29">42</Item>
  <Item Name="Duplicate Report" Zone="6">0</Item>
  <Item Name="Daily Report" Zone="3" Date="2015-11-20T06:00:00">278</Item>
  <Item Name="Metering Tech (Bias Adjust)" Zone="7">0</Item>
  <Item Name="Monthly Report" Zone="2" Date="2015-11-06T11:12:28">41</Item>
 </Report_Index>
</Notify>
<csum>329ec27c3a6e6c2205a5721bd4819b3e</csum>
```

33.2 Pull Comms Format

33.2.1 <Identify> : Identification

Request

```
<Device_Report>
 <Request>
  <Identify/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-01T12:44:57</Date>
  <RTU_Name>LACT MicroCube</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Identify>
  <Hostname>LACT MicroCube</Hostname>
  <Comment>LACT MicroCube</Comment>
  <Application>AMR LACT 5v3</Application>
  <AppVersion>5v3r13</AppVersion>
  <AppSetup>Base*</AppSetup>
  <AppChecksum>F9613E415AA293DF</AppChecksum>
  <ConstantsChecksum>0000000000000000</ConstantsChecksum>
  <Version>4v2r0-6144-BETA</Version>
  <Altera>HW 2.00 SW 2.05</Altera>
  <ExpansionCardDate>14/12/02 14:34:23</ExpansionCardDate>
  <ExpansionCardIdent>1412302 83ZZ cal. post heat soa</ExpansionCardIdent>
  <Uptime>0 days, 00:06:48</Uptime>
  <Serial_Number>C8A030838DC0</Serial_Number>
  <Link_Status_1>Up</Link_Status_1>
  <IP_Address_1>10.0.150.123</IP_Address_1>
  <Link_Status_2>Down</Link_Status_2>
  <IP_Address_2>10.250.250.250</IP_Address_2>
  <Status>Healthy</Status>
  <Report_Index>
   <Item Name="Bill Of Lading" Zone="5" Date="2015-11-30T16:01:08">298</Item>
   <Item Name="Snapshot" Zone="99">0</Item>
   <Item Name="Daily Report" Zone="4" Date="2015-12-01T00:00:00">988</Item>
   <Item Name="Monthly Report" Zone="16" Date="2015-12-01T00:00:00">5</Item>
   <Item Name="Duplicate Report" Zone="15">0</Item>
   <Item Name="Metering Tech (Sampler Can Pull)" Zone="7" Date="2015-11-30T15:47:21">4</Item>
   <Item Name="Metering Tech (Oil Prove)" Zone="7">0</Item>
   <Item Name="Metering Tech (Water Prove)" Zone="7">0</Item>
   <Item Name="Metering Tech (Bias Adjust)" Zone="7">0</Item>
  </Report_Index>
  <Audit_Log_Index>
   <Item Type="Alarm">1113</Item>
   <Item Type="System">702</Item>
   <Item Type="Operator">1616</Item>
   <Item Type="Metrology">0</Item>
   <Item Type="Security">591</Item>
   <Item Type="Application">0</Item>
  </Audit_Log_Index>
 </Identify>
</Device_Report>
```

33.2.2 <Login> : User login

Request

```
<Device_Report>
 <Request>
  <Login Name="admin" Code="00000000"/>
 </Request>
</Device_Report>
```

If not already logged in:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T10:57:48</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Login>
  <Pass/>
 </Login>
</Device_Report>
```

If already logged in:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T10:58:04</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Login>
  <Fail>already logged in</Fail>
 </Login>
</Device_Report>
```

If incorrect password and/or incorrect or unknown username:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T10:58:32</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Login>
  <Fail>Login failed</Fail>
 </Login>
</Device_Report>
```

33.2.3 <Logout> : User logout

Request

```
<Device_Report>
 <Request>
  <Login Name="admin" Code="00000000"/>
 </Request>
</Device_Report>
```

If logged in:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T11:04:13</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Logout>
  <Pass/>
 </Logout>
</Device_Report>
```

If not logged in:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T11:02:33</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Logout>
  <Fail>Not logged in</Fail>
 </Logout>
</Device_Report>
```

33.2.4 <Displays> / <Live_Displays> : Display tree

Showing all remote displays – this response should show all displays/pins whether they are currently live (active) or not:

Request

```
<Device_Report>
 <Request>
  <Displays/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T06:09:46</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Displays>
  <Menu Name="Driver Menu" ActiveId="140764" ActiveValue="Driver Mode">
   <Screen Name="LocalPanel"></Screen>
  </Menu>
  <Menu Name="Metering Tech Menu" ActiveId="140764" ActiveValue="Tech Mode">
   <Screen Name="LocalPanel"></Screen>
  </Menu>
  <Menu Name="System">
   <Screen Name="Time / Date"></Screen>
   <Screen Name="Network"></Screen>
   <Screen Name="User Info"></Screen>
   <Screen Name="Initial Setup">
    <Item Name="Application Type" Id="131237" ReadLevel="Anyone" Type="String" WriteId="131237" WriteLevel="Admin" Table="LACT
(Loading),ACT (Offloading)">LACT (Loading)</Item>
    <Item Name="Manually Enter Lease Ticket Data?" Id="146725" ReadLevel="Anyone" ActiveId="131237" ActiveValue="ACT (Offloading)"
Type="String" WriteId="146725" WriteLevel="Admin" Table="No,Yes">Yes</Item>
    <Item Name="Company Name" Id="146734" ReadLevel="Anyone" Type="String" WriteId="146734" WriteLevel="Admin"
StringSize="32">Coastal</Item>
    <Item Name="Device ID" Id="139193" ReadLevel="Anyone" Type="String" WriteId="139193" WriteLevel="Admin" StringSize="32">Coastal
LACT MicroCube Demo</Item>
    <Item Name="Comment" Id="146733" ReadLevel="Anyone" Type="String" WriteId="146733" WriteLevel="Admin" StringSize="32">For
Demonstration &amp;amp; Sales</Item>
    <Item Name="Lease Location" Id="146731" ReadLevel="Anyone" ActiveId="131237" ActiveValue="LACT (Loading)" Type="String"
WriteId="146731" WriteLevel="Admin" StringSize="32">Sealy</Item>
    <Item Name="Offload Location" Id="146732" ReadLevel="Anyone" ActiveId="131237" ActiveValue="ACT (Offloading)" Type="String"
WriteId="146732" WriteLevel="Admin" StringSize="32"></Item>
    <Item Name="Auto Web Logout (0 = Disabled)" Id="136933" ReadLevel="Anyone" Unit="mins" Type="Int" WriteId="136933"
WriteLevel="Admin">6000</Item>
    <Item Name="Driver Data Entry Timeout" Id="141450" ReadLevel="Anyone" Unit="s" Type="Int" WriteId="141450"
WriteLevel="Admin">30</Item>
    <Item Name="Ground Input Timeout" Id="141453" ReadLevel="Anyone" Unit="s" Type="Int" WriteId="141453"
WriteLevel="Admin">20</Item>
    <Item Name="End of Day Time" Id="149462" ReadLevel="Anyone" Unit=":00" Type="Int" WriteId="149462" WriteLevel="Admin">0</Item>
    <Item Name="Trend Sample Period" Id="145148" ReadLevel="Anyone" Type="String" WriteId="145148" WriteLevel="Admin" Table="Every 5
Seconds,Every 10 Seconds,Every 15 Seconds,Every 20 Seconds,Every 30 Seconds,Every Minute">Every 5 Seconds</Item>
    <Item Name="Modbus Totals - # Decimal Places" Id="143074" ReadLevel="Anyone" Type="String" WriteId="143074" WriteLevel="Admin"
Table="Enterprise (0 DP),API (2 DP)">API (2 DP)</Item>
    <Item Name="PIN Code Required" Id="143809" ReadLevel="Anyone" Type="String" WriteId="143809" WriteLevel="Admin"
Table="No,Yes">Yes</Item>
...
...
...
...
   </Screen>
   <Screen Name="Report Index">
    <Report_Index>
     <Item Name="Bill Of Lading" Zone="5" Date="2015-11-23T05:37:06">188</Item>
     <Item Name="Snapshot" Zone="99">0</Item>
     <Item Name="Daily Report" Zone="4" Date="2015-11-23T00:00:00">239</Item>
     <Item Name="Monthly Report" Zone="16" Date="2015-11-03T11:29:59">3</Item>
     <Item Name="Duplicate Report" Zone="15" Date="2015-11-11T07:46:12">2</Item>
     <Item Name="Metering Tech (Sampler Can Pull)" Zone="7" Date="2015-11-11T08:55:33">87</Item>
     <Item Name="Metering Tech (Oil Prove)" Zone="7" Date="2015-11-11T08:54:35">86</Item>
     <Item Name="Metering Tech (Water Prove)" Zone="7" Date="2015-11-11T08:45:44">83</Item>
     <Item Name="Metering Tech (Bias Adjust)" Zone="7" Date="2015-11-11T08:53:27">85</Item>
    </Report_Index>
   </Screen>
   <Screen Name="Users">
    <Users Levels="Metrology,Admin,Technician,Operator,Management,Anyone">
     <Item Name="admin" Level="Admin"/>
     <Item Name="Driver" Level="Operator"/>
    </Users>
   </Screen>
  </Menu>
 </Displays>
</Device_Report>
```

Showing any live (active) displays – this response should show any local displays/pins that are live (active) on the local panel:

Request

```
<Device_Report>
 <Request>
  <Live_Displays Name="Local"/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T06:10:39</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Live_Displays>
  <Menu Name="Driver Menu" ActiveId="140764" ActiveValue="Driver Mode">
   <Screen Name="LocalPanel"></Screen>
  </Menu>
  <Menu Name="System">
   <Screen Name="Time / Date"></Screen>
   <Screen Name="Network"></Screen>
   <Screen Name="User Info"></Screen>
   <Screen Name="Initial Setup">
    <Item Name="Application Type" Id="131237" ReadLevel="Anyone" Type="String" WriteId="131237" WriteLevel="Admin" Table="LACT
(Loading),ACT (Offloading)">LACT (Loading)</Item>
    <Item Name="Company Name" Id="146734" ReadLevel="Anyone" Type="String" WriteId="146734" WriteLevel="Admin"
StringSize="32">Coastal</Item>
    <Item Name="Device ID" Id="139193" ReadLevel="Anyone" Type="String" WriteId="139193" WriteLevel="Admin" StringSize="32">Coastal
LACT MicroCube Demo</Item>
    <Item Name="Comment" Id="146733" ReadLevel="Anyone" Type="String" WriteId="146733" WriteLevel="Admin" StringSize="32">For
Demonstration &amp;amp; Sales</Item>
    <Item Name="Lease Location" Id="146731" ReadLevel="Anyone" Type="String" WriteId="146731" WriteLevel="Admin"
StringSize="32">Sealy</Item>
    <Item Name="Auto Web Logout (0 = Disabled)" Id="136933" ReadLevel="Anyone" Unit="mins" Type="Int" WriteId="136933"
WriteLevel="Admin">6000</Item>
    <Item Name="Driver Data Entry Timeout" Id="141450" ReadLevel="Anyone" Unit="s" Type="Int" WriteId="141450"
WriteLevel="Admin">30</Item>
    <Item Name="Ground Input Timeout" Id="141453" ReadLevel="Anyone" Unit="s" Type="Int" WriteId="141453"
WriteLevel="Admin">20</Item>
    <Item Name="End of Day Time" Id="149462" ReadLevel="Anyone" Unit=":00" Type="Int" WriteId="149462" WriteLevel="Admin">0</Item>
    <Item Name="Trend Sample Period" Id="145148" ReadLevel="Anyone" Type="String" WriteId="145148" WriteLevel="Admin" Table="Every 5
Seconds,Every 10 Seconds,Every 15 Seconds,Every 20 Seconds,Every 30 Seconds,Every Minute">Every 5 Seconds</Item>
    <Item Name="Modbus Totals - # Decimal Places" Id="143074" ReadLevel="Anyone" Type="String" WriteId="143074" WriteLevel="Admin"
Table="Enterprise (0 DP),API (2 DP)">API (2 DP)</Item>
    <Item Name="PIN Code Required" Id="143809" ReadLevel="Anyone" Type="String" WriteId="143809" WriteLevel="Admin"
Table="No,Yes">Yes</Item>
    <Item Name="Pin Code Value" Id="143806" ReadLevel="Anyone" Type="Int" WriteId="143806" WriteLevel="Admin">1234</Item>
    <Item Name="Stop Loading Trigger Volume" Id="150606" ReadLevel="Anyone" Unit="bbls" UnitId="126578" Type="Double"
WriteId="150606" WriteLevel="Admin" Raw="0x403D000000000000">29.00</Item>
    <Item Name="Suspend Load Trigger Option" Id="146679" ReadLevel="Anyone" Type="String" WriteId="146679" WriteLevel="Admin"
Table="Disabled,Fixed Value,Driver Entered">Driver Entered</Item>
    <Item Name="Water Measured?" Id="146744" ReadLevel="Anyone" Type="String" WriteId="146744" WriteLevel="Admin"
Table="No,Yes">Yes</Item>
    <Item Name="Oil Pulse Input" Id="146714" ReadLevel="Anyone" Type="String">Pulse Train A</Item>
    <Item Name="Water Pulse Input" Id="146715" ReadLevel="Anyone" Type="String">Pulse Train B</Item>
    <Item Name="Available Languages" Id="149389" ReadLevel="Anyone" Type="Int" WriteId="149389" WriteLevel="Admin">3</Item>
   </Screen>
...
...
...
     <Item Index="3">
      <Item Name="Method" Id="340" Type="String" WriteId="340" Table="None,Network (Postscript)">Network (Postscript)</Item>
      <Item Name="Name" Id="350" Type="String" WriteId="350">OK City</Item>
      <Item Name="Network Address" Id="342" Type="IP" WriteId="342" ActiveId="340" ActiveValue="Network">10.0.0.11</Item>
      <Item Name="Network Port" Id="344" Type="Int" WriteId="344" ActiveId="340" ActiveValue="Network">9100</Item>
     </Item>
    </Printers>
   </Screen>
   <Screen Name="Report Index">
    <Report_Index>
     <Item Name="Bill Of Lading" Zone="5" Date="2015-11-23T05:37:06">188</Item>
     <Item Name="Snapshot" Zone="99">0</Item>
     <Item Name="Daily Report" Zone="4" Date="2015-11-23T00:00:00">239</Item>
     <Item Name="Monthly Report" Zone="16" Date="2015-11-03T11:29:59">3</Item>
     <Item Name="Duplicate Report" Zone="15" Date="2015-11-11T07:46:12">2</Item>
     <Item Name="Metering Tech (Sampler Can Pull)" Zone="7" Date="2015-11-11T08:55:33">87</Item>
     <Item Name="Metering Tech (Oil Prove)" Zone="7" Date="2015-11-11T08:54:35">86</Item>
     <Item Name="Metering Tech (Water Prove)" Zone="7" Date="2015-11-11T08:45:44">83</Item>
     <Item Name="Metering Tech (Bias Adjust)" Zone="7" Date="2015-11-11T08:53:27">85</Item>
    </Report_Index>
   </Screen>
   <Screen Name="Users">
    <Users Levels="Metrology,Admin,Technician,Operator,Management,Anyone">
     <Item Name="admin" Level="Admin"/>
     <Item Name="Driver" Level="Operator"/>
    </Users>
   </Screen>
  </Menu>
 </Live_Displays>
</Device_Report>
```

Showing the requested subset of the displays – this response should show any displays/pins for the menu you have requested (and sub-menus of) whether they are currently live (active) or not. Replacing <Displays> and </Displays> with <Live_Displays> and </Live_Displays> would show only the displays/pins that are live (active):

Request

```
<Device_Report>
 <Request>
  <Displays>
   <Item Name="Water"/>
  </Displays>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-24T04:18:02</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Displays>
  <Screen Name="Water" ActiveId="146744" ActiveValue="Yes">
   <Screen Name="Water Flow Meter">
    <Item Name="Water Flow Meter K Factor" Id="146796" ReadLevel="Anyone" Unit="pulses/bbl" UnitId="126577" ADP="2" Type="Double"
Raw="0x408F400000000000">1000.00</Item>
    <Item Name="Water Flow Meter K Factor" Id="146791" Unit="pulses/bbl" UnitId="126577" Type="Double" WriteId="146791"
WriteLevel="Admin" Raw="0x408F400000000000">1000</Item>
    <Item Name="Water Meter Factor" Id="146769" ReadLevel="Anyone" Type="Double" WriteId="146769" WriteLevel="Admin"
Raw="0x4023FAE147AE147B">9.9900</Item>
    <Item Name="Water Flow Meter Serial Number" Id="148216" ReadLevel="Anyone" Type="String" WriteId="148216" WriteLevel="Admin"
StringSize="32">123ABC</Item>
    <Item Name="Water Flow Meter Size" Id="148217" ReadLevel="Anyone" Type="String" WriteId="148217" WriteLevel="Admin"
StringSize="32">2&amp;quot;</Item>
    <Item Name="Water Flow Meter Model" Id="148218" ReadLevel="Anyone" Type="String" WriteId="148218" WriteLevel="Admin"
StringSize="32">Smiths Ultra</Item>
    <Item Name="Water Flow Meter ID" Id="148219" ReadLevel="Anyone" Type="String" WriteId="148219" WriteLevel="Admin"
StringSize="32">Water#1</Item>
    <Item Name="Water Flow Meter Manufacturer" Id="148220" ReadLevel="Anyone" Type="String" WriteId="148220" WriteLevel="Admin"
StringSize="32">FMC</Item>
    <Item Name="Water Indicated Volume Flow Rate" Id="146836" ReadLevel="Anyone" Unit="bbls/hr" UnitId="126582" Type="Double"
Raw="0x40BC1FFFA194BA68">7200.0</Item>
   </Screen>
   <Screen Name="Measured Water Temperature">
    <Item Name="Water Temperature In Use" Id="148401" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
Raw="0x404E000000000000">60.0</Item>
    <Item Name="Water Temperature 4mA Scale Value" Id="148390" ReadLevel="Anyone" ActiveId="148417" ActiveValue="Yes" Unit="°F"
UnitId="126575" Type="Double" WriteId="148390" WriteLevel="Admin" Raw="0x0000000000000000">0.0</Item>
    <Item Name="Water Temperature 20mA Scale Value" Id="148391" ReadLevel="Anyone" ActiveId="148417" ActiveValue="Yes" Unit="°F"
UnitId="126575" Type="Double" WriteId="148391" WriteLevel="Admin" Raw="0x4069000000000000">200.0</Item>
    <Item Name="Water Temperature Operating Status" Id="148402" ReadLevel="Anyone" Type="String">Override</Item>
    <Item Name="Water Temperature Mode Setting" Id="148667" Type="String" WriteId="148667" WriteLevel="Admin" Table="Always
Measured,Always Override,Use Default on Failure">Always Override</Item>
    <Item Name="Water Temperature Recover After Fail" Id="148382" ReadLevel="Anyone" Type="String" WriteId="148382"
WriteLevel="Admin" Table="No,Yes">Yes</Item>
    <Item Name="Water Temperature Override Value" Id="148383" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
WriteId="148383" WriteLevel="Admin" Raw="0x404E000000000000">60.0</Item>
    <Item Name="Water Temperature Default Value" Id="148384" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
WriteId="148384" WriteLevel="Admin" Raw="0x0000000000000000">0</Item>
    <Item Name="Water Temperature Transmitter Value|No Bias" Id="148404" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
Raw="0x40565197D1FC2DB4">89.3</Item>
    <Item Name="Water Temperature Bias Value" Id="148396" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
WriteId="148396" WriteLevel="Admin" Raw="0x0000000000000000">0</Item>
    <Item Name="Water Temperature Transmitter Value|with Bias" Id="148403" ReadLevel="Anyone" Unit="°F" UnitId="126575"
Type="Double" Raw="0x40565197D1FC2DB4">89.3</Item>
    <Item Name="Water Temperature Low Alarm Limit" Id="148387" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
WriteId="148387" WriteLevel="Admin" Raw="0xC197D783FC000000">-99999999</Item>
    <Item Name="Water Temperature High Alarm Limit" Id="148388" ReadLevel="Anyone" Unit="°F" UnitId="126575" Type="Double"
WriteId="148388" WriteLevel="Admin" Raw="0x4197D783FC000000">99999999</Item>
    <Item Name="Low Input Fail Point" Id="148392" ReadLevel="Anyone" ActiveId="148417" ActiveValue="Yes" Unit="mA" Type="Double"
WriteId="148392" WriteLevel="Admin" Raw="0x400C000000000000">3.5</Item>
    <Item Name="High Input Fail Point" Id="148393" ReadLevel="Anyone" ActiveId="148417" ActiveValue="Yes" Unit="mA" Type="Double"
WriteId="148393" WriteLevel="Admin" Raw="0x4034800000000000">20.5</Item>
    <Item Name="Low  Water Thermistor Input Fail Point" Id="148394" ReadLevel="Anyone" ActiveId="148418" ActiveValue="Yes" Unit="mA"
Type="Double" WriteId="148394" WriteLevel="Admin" Raw="0x400C000000000000">3.5</Item>
    <Item Name="High Water Thermistor Input Fail Point" Id="148395" ReadLevel="Anyone" ActiveId="148418" ActiveValue="Yes" Unit="mA"
Type="Double" WriteId="148395" WriteLevel="Admin" Raw="0x4032000000000000">18</Item>
    <Item Name="Low Input Fail Point" Id="148377" ReadLevel="Anyone" ActiveId="148416" ActiveValue="Yes" Unit="Ω" Type="Double"
WriteId="148377" WriteLevel="Admin" Raw="0x404E000000000000">60</Item>
    <Item Name="High Input Fail Point" Id="148378" ReadLevel="Anyone" ActiveId="148416" ActiveValue="Yes" Unit="Ω" Type="Double"
WriteId="148378" WriteLevel="Admin" Raw="0x4066800000000000">180</Item>
   </Screen>
   <Screen Name="Totals">
    <Screen Name="Cumulative Totals">
     <Item Name="Non-Resettable Total [IV]" Id="146983" ReadLevel="Anyone" Unit="bbls" UnitId="126578" Type="Double"
Raw="0x413C0A5CBAE147AE">1837660.73</Item>
     <Item Name="Cumulative Water Total [IV]" Id="146984_2" ReadLevel="Anyone" Unit="bbls" UnitId="126593_2" Type="Double"
Raw="0x413C0A5CBAE147AE">1837660.73</Item>
     <Item Name="Cumulative Water Total [GOV]" Id="146984_7" ReadLevel="Anyone" Unit="bbls" UnitId="126593_7" Type="Double"
Raw="0x415FE632FF5C28F6">8362187.99</Item>
    </Screen>
...
...
   </Screen>
  </Screen>
 </Displays>
</Device_Report>
```

33.2.5 <Alarm_List> : List of all system alarms

Request

```
<Device_Report>
 <Request>
  <Alarm_List/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T05:25:30</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Alarm_List>
  <Item Name="Computer Alarm" Id="126414"/>
  <Item Name="Strainer Blocked" Id="142849"/>
  <Item Name="Totals Fault" Id="149535"/>
  <Item Name="Unallocated Flow Detected" Id="143317"/>
  <Item Name="Pulse Out 1 Set-up Fault" Id="131070"/>
  <Item Name="Pulse Out 1 Fault" Id="131071"/>
  <Item Name="S&amp;amp;W High" Id="126830"/>
  <Item Name="S&amp;amp;W Low" Id="126829"/>
  <Item Name="S&amp;amp;W Transmitter Fail" Id="126826"/>
  <Item Name="System Restart" Id="126763"/>
  <Item Name="Oil Pressure High" Id="126890"/>
  <Item Name="Oil Pressure Low" Id="126889"/>
  <Item Name="Oil Pressure Transmitter Fail" Id="126886"/>
  <Item Name="Oil Temperature High" Id="126953"/>
  <Item Name="Oil Temperature Low" Id="126952"/>
  <Item Name="Oil Temperature Transmitter Fail" Id="126949"/>
  <Item Name="Water Temperature High" Id="148411"/>
  <Item Name="Water Temperature Low" Id="148410"/>
  <Item Name="Water Temperature Transmitter Fail" Id="148407"/>
  <Item Name="Simulation Mode Enabled" Id="143058"/>
 </Alarm_List>
```

33.2.6 <Alarms> : System alarms

Request

```
<Device_Report>
 <Request>
  <Alarms/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T12:39:15</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Alarms>
  <Item Date="2015-11-23T12:38:08" Id="142849" Accepted="No">Strainer Blocked</Item>
 </Alarms>
</Device_Report>
```

33.2.7 <Report_Index> : Report index

Request

```
<Device_Report>
 <Request>
  <Report_Index/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T05:56:09</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Report_Index>
  <Item Name="Bill Of Lading" Zone="5" Date="2015-11-23T05:37:06">188</Item>
  <Item Name="Snapshot" Zone="99">0</Item>
  <Item Name="Daily Report" Zone="4" Date="2015-11-23T00:00:00">239</Item>
  <Item Name="Monthly Report" Zone="16" Date="2015-11-03T11:29:59">3</Item>
  <Item Name="Duplicate Report" Zone="15" Date="2015-11-11T07:46:12">2</Item>
  <Item Name="Metering Tech (Sampler Can Pull)" Zone="7" Date="2015-11-11T08:55:33">87</Item>
  <Item Name="Metering Tech (Oil Prove)" Zone="7" Date="2015-11-11T08:54:35">86</Item>
  <Item Name="Metering Tech (Water Prove)" Zone="7" Date="2015-11-11T08:45:44">83</Item>
  <Item Name="Metering Tech (Bias Adjust)" Zone="7" Date="2015-11-11T08:53:27">85</Item>
 </Report_Index>
</Device_Report>
```

Request

```
<Device_Report>
 <Request>
  <Report_Index>
   <Item Name="Bill Of Lading"/>
  </Report_Index>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T05:56:43</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Report_Index>
  <Item Name="Bill Of Lading">
   <Report Date="2015-11-23T05:37:06" Id="188"/>
   <Report Date="2015-11-23T05:33:16" Id="187"/>
   <Report Date="2015-11-18T07:50:17" Id="186"/>
   <Report Date="2015-11-11T09:18:17" Id="185"/>
   <Report Date="2015-11-11T08:38:58" Id="184"/>
   <Report Date="2015-11-11T08:36:02" Id="183"/>
   <Report Date="2015-11-11T08:20:56" Id="182"/>
   <Report Date="2015-11-11T07:49:44" Id="181"/>
   <Report Date="2015-11-11T07:46:09" Id="180"/>
   <Report Date="2015-11-04T08:35:18" Id="179"/>
   <Report Date="2015-11-04T08:32:02" Id="178"/>
   <Report Date="2015-11-04T08:30:23" Id="177"/>
   <Report Date="2015-11-04T05:10:59" Id="176"/>
   <Report Date="2015-11-04T02:36:13" Id="175"/>
   <Report Date="2015-11-03T12:21:19" Id="174"/>
   <Report Date="2015-11-03T12:17:13" Id="173"/>
   <Report Date="2015-11-03T12:13:35" Id="172"/>
   <Report Date="2015-11-03T12:08:55" Id="171"/>
  </Item>
 </Report_Index>
</Device_Report>
```

33.2.8 <Report_Data> : Data from archived report

Request

```
<Device_Report>
 <Request>
  <Report_Data>
   <Item Name="Bill Of Lading" Id="186"/>
  </Report_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-11T05:18:08</Date>
  <RTU_Name>MOBs Test Machine</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Report_Data>
  <Item Name="Bill Of Lading" Id="186" Date="2015-11-18T07:50:17">
   <Item Index="1" Raw="0x000011320D110A73">2015/11/18 07:50:17</Item>
   <Item Index="2">Coastal</Item>
   <Item Index="3">Coastal LACT MicroCube Demo</Item>
   <Item Index="4">ABC123</Item>
   <Item Index="5">For Demonstration &amp;amp; Sales</Item>
   <Item Index="6">Load Ended</Item>
   <Item Index="7">3</Item>
   <Item Index="8">2</Item>
   <Item Index="9">16</Item>
   <Item Index="10">44</Item>
   <Item Index="11">FRED</Item>
   <Item Index="12">ASDA</Item>
   <Item Index="14">Sealy</Item>
   <Item Index="16" Raw="0x00001D1D0F100A73">2015/11/17 09:29:29</Item>
   <Item Index="17" ADP="2" Unit="bbls" Raw="0x40913BF5C28F5C29">1102.99</Item>
   <Item Index="18">bbls</Item>
   <Item Index="19" ADP="2" Unit="bbls" Raw="0x4091967AE147AE14">1125.62</Item>
   <Item Index="20">bbls</Item>
   <Item Index="21" Raw="0x000011320D110A73">2015/11/18 07:50:17</Item>
   <Item Index="22" ADP="2" Unit="bbls" Raw="0x4091D8CCCCCCCCCD">1142.2</Item>
   <Item Index="23">bbls</Item>
   <Item Index="24" ADP="2" Unit="bbls" Raw="0x4092430000000000">1168.75</Item>
   <Item Index="25">bbls</Item>
   <Item Index="26" ADP="2" Unit="bbls" Raw="0x40439AE147AE147B">39.21</Item>
   <Item Index="27">bbls</Item>
   <Item Index="28" ADP="4" Raw="0x3FF199999999999A">1.1</Item>
   <Item Index="29" ADP="2" Unit="bbls" Raw="0x404590A3D70A3D71">43.13</Item>
   <Item Index="30">bbls</Item>
   <Item Index="31">Off-Loaded Weight:</Item>
   <Item Index="32" ADP="1" Unit="lbs" Raw="0x0000000000000000">0</Item>
   <Item Index="33">lbs</Item>
   <Item Index="34" Unit="pulses/bbl" Raw="0x408F400000000000">1000</Item>
   <Item Index="35">pulses/bbl</Item>
   <Item Index="36" ADP="1" Unit="°F" Raw="0x405680F02CC1F2C8">90.014659108546</Item>
   <Item Index="37">°F</Item>
   <Item Index="38" ADP="2" Unit="psig" Raw="0x4068E7071D73E4FE">199.219618536335</Item>
   <Item Index="39">psig</Item>
   <Item Index="42" ADP="3" Unit="%" Raw="0x3FDF067ED3D3CF87">0.484771448958093</Item>
   <Item Index="43" ADP="2" Unit="psia" Raw="0x402E000000000000">15</Item>
   <Item Index="44">psia</Item>
   <Item Index="47" ADP="1" Unit="°F" Raw="0xC08F380000000000">-999</Item>
   <Item Index="48">°F</Item>
   <Item Index="51" ADP="2" Unit="°API" Raw="0xC08F380000000000">-999</Item>
   <Item Index="52" Unit="°API">°API</Item>
   <Item Index="53" ADP="3" Unit="%" Raw="0x3FECCCCCCCCCCCCD">0.9</Item>
  </Item>
 </Report_Data>
</Device_Report>
```

33.2.9 <Report> : Archive report

No Id specified gives the template:

Request

```
<Device_Report>
 <Request>
  <Report>
   <Item Name="Bill Of Lading"/>
  </Report>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-11T05:18:52</Date>
  <RTU_Name>MOBs Test Machine</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Report>
  <Item Name="Bill Of Lading">
   <Item Index="1" Name="Batch_End_Time" Tag="Report Time/Date" Type="DateTime" Attributes="addr=common,30"/>
   <Item Index="2" Name="Company Name" Tag="Company Name" Type="String"/>
   <Item Index="3" Name="Device ID" Tag="Device ID" Type="String"/>
   <Item Index="4" Name="Oil Flow Meter ID" Tag="Meter ID" Type="String"/>
   <Item Index="5" Name="Comment" Tag="Comment" Type="String"/>
   <Item Index="6" Name="Prev_Load_Status" Tag="Load Status" Type="String"/>
   <Item Index="7" Name="Batch Sequence #" Tag="Batch Sequence #" Type="Int"/>
   <Item Index="8" Name="Truck Ticket #" Tag="Truck Ticket #" Type="Int" Attributes="addr=common,285"/>
   <Item Index="9" Name="Transaction #" Tag="Transaction #" Type="Int"/>
   <Item Index="10" Name="Run Ticket Number" Tag="Run Ticket #" Type="Int" Attributes="addr=common,4"/>
   <Item Index="11" Name="Driver ID" Tag="Driver ID" Type="String" Attributes="addr=common,620"/>
   <Item Index="12" Name="Truck ID" Tag="Truck ID" Type="String" Attributes="addr=common,311"/>
   <Item Index="13" Name="Lease Location" Tag="ACT Lease Location - Entered" Type="String"
Attributes="addr=common,141"/>
   <Item Index="14" Name="Lease Location" Tag="LACT Lease Location - Fixed" Type="String"
Attributes="addr=common,141"/>
   <Item Index="15" Name="Offload Location" Tag="ACT Offload Location - Fixed" Type="String"
Attributes="addr=common,167"/>
   <Item Index="16" Name="Period_Batch_Start_Time_Date" Tag="Opening Time/Date" Type="DateTime"
Attributes="addr=common,249"/>
   <Item Index="17" Name="Prev_CumStart[IV]" Tag="Opening IV Cumulative Total" Type="Double"
Attributes="addr=metered,98"/>
   <Item Index="18" Name="Gvol Unit" Tag="Opening IV Cumulative Unit" Type="String"/>
   <Item Index="19" Name="Prev_CumStart[GOV]" Tag="Opening GOV Cumulative Total" Type="Double"/>
   <Item Index="20" Name="Gvol Unit" Tag="Opening GOV Cumulative Unit" Type="String"/>
   <Item Index="21" Name="Period_Batch_End_Time_Date" Tag="Closing Time/Date" Type="DateTime"
Attributes="addr=common,253"/>
   <Item Index="22" Name="Prev_End[IV]" Tag="Closing IV Cumulative Total" Type="Double"
Attributes="addr=metered,106"/>
   <Item Index="23" Name="Gvol Unit" Tag="Closing IV Cumulative Unit" Type="String"/>
   <Item Index="24" Name="Prev_End[GOV]" Tag="Closing GOV Cumulative Total" Type="Double"/>
   <Item Index="25" Name="Gvol Unit" Tag="Closing GOV Cumulative Unit" Type="String"/>
   <Item Index="26" Name="Load Total [IV]" Tag="IV Loaded" Type="Double" Attributes="addr=metered,90"/>
...
...
   <Item Index="42" Name="Average S&amp;amp;W" Tag="FWA S&amp;amp;W" Type="Double"/>
   <Item Index="43" Name="Local Atmospheric Pressure" Tag="Local Atmospheric Pressure" Type="Double"
Attributes="addr=metered,14,metered,298"/>
   <Item Index="44" Name="Absolute Pressure Unit" Tag="Local Atmospheric Pressure Unit" Type="String"/>
   <Item Index="45" Name="Sample Temperature" Tag="Can Sample Temperature" Type="Double"
Attributes="addr=metered,10"/>
   <Item Index="46" Name="T_Unit" Tag="Can Sample Temperature Unit" Type="String"/>
   <Item Index="47" Name="Sample Temperature" Tag="Driver Entered Sample Temperature" Type="Double"
Attributes="addr=metered,10"/>
   <Item Index="48" Name="T_Unit" Tag="Driver Entered Sample Temperature unit" Type="String"/>
   <Item Index="49" Name="Sample Gravity" Tag="Can Sample Density" Type="Double" Attributes="addr=metered,6"/>
   <Item Index="50" Name="D_unit" Tag="Can Sample Density Unit" Type="String"/>
   <Item Index="51" Name="Sample Gravity" Tag="Driver Entered Sample Density" Type="Double"
Attributes="addr=metered,6"/>
   <Item Index="52" Name="D_unit" Tag="Driver Entered Sample Density Unit" Type="String"/>
   <Item Index="53" Name="Shakeout S&amp;amp;W" Tag="Can Average Shakedown S&amp;amp;W" Type="Double"
Attributes="addr=metered,210"/>
   <Item Index="54" Name="Shakeout S&amp;amp;W" Tag="Driver Entered Average Shakedown S&amp;amp;W" Type="Double"
Attributes="addr=metered,210"/>
   <Item Index="55" Name="Lease Ticket Volume" Tag="LACT Ticket IV Loaded" Type="Double"/>
   <Item Index="56" Name="Gvol Unit" Tag="LACT Ticket IV Loaded Unit" Type="String"/>
   <Item Index="57" Name="Lease Ticket Sample Gravity" Tag="LACT Ticket Sample Density" Type="Double"/>
   <Item Index="58" Name="D_unit" Tag="LACT Ticket Sample Density Unit" Type="String"/>
   <Item Index="59" Name="Lease Ticket Pressure" Tag="LACT Ticket Pressure" Type="Double"/>
   <Item Index="60" Name="P_unit" Tag="LACT Ticket Pressure Unit" Type="String"/>
   <Item Index="61" Name="Lease Ticket Sample Temperature" Tag="LACT Ticket Sample Temperature" Type="Double"/>
   <Item Index="62" Name="T_Unit" Tag="LACT Ticket Sample Temperature Unit" Type="String"/>
   <Item Index="63" Name="Lease Ticket Flow Weighted Temperature" Tag="LACT Ticket FWA Temperature"
Type="Double"/>
   <Item Index="64" Name="T_Unit" Tag="LACT Ticket FWA Temperature Unit" Type="String"/>
   <Item Index="65" Name="Lease Ticket Shakeout S&amp;amp;W" Tag="LACT Ticket Shakedown S&amp;amp;W" Type="Double"/>
  </Item>
 </Report>
</Device_Report>
```

With Id specified, gives the formatted report with control chars for the formatting (bold, underlined, etc.):

Request

```
<Device_Report>
 <Request>
  <Report>
   <Item Name="Daily Report" Id="257"/>
  </Report>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-11T05:20:31</Date>
  <RTU_Name>MOBs Test Machine</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Report>
  <Item Name="Daily Report" Id="257" Date="2015-12-11T00:00:00">&lt;b&gt;&lt;u&gt;DAILY
REPORT&lt;/u&gt;&lt;/b&gt;

Report Date/Time: 2015/12/11 00:00:00

Company Name: Coastal Flow
Device ID:    MOBs Test Machine
Meter ID:     ABC123
Comment:      Sales Training Unit

Report Number:      00037
Last Transaction #: 23

Lease Location:     Seminole, Tx

&lt;b&gt;OIL ACCUMULATORS&lt;/b&gt;
Opening  IV Accumulator:             70637.85 bbls
Opening GOV Accumulator:             78648.33 bbls

Closing  IV Accumulator:             70637.85 bbls
Closing GOV Accumulator:             78648.33 bbls

Daily  IV Total:                         0.00 bbls
Daily GOV Total:                         0.00 bbls
Daily Unallocated IV Total:              0.00 bbls
Sampler Can Grab Count:                 0 grabs

Oil Meter Factor:       1.1150

&lt;b&gt;OIL FLOW WEIGHTED AVERAGE DATA&lt;/b&gt;
Temperature:          0.0 °F
Pressure:            0.00 psig
S&amp;W Monitor:        0.000 %
Sample Temperature:   0.0 °F
Sample Gravity:      0.00 °API

&lt;b&gt;METERED FREE WATER ACCUMULATORS&lt;/b&gt;
Opening  IV Accumulator:           3714607.11 bbls
Opening GOV Accumulator:           7112882.26 bbls
Opening Net Accumulator:           7112696.08 S bbls

Closing  IV Accumulator:           3801007.07 bbls
Closing GOV Accumulator:           7976017.88 bbls
Closing Net Accumulator:           7975831.70 S bbls

Daily  IV Total:                     86399.96 bbls
Daily GOV Total:                    863135.62 bbls
Daily Net Total:                    863135.62 S bbls

Metered Free Water Meter Factor:     9.9900

&lt;b&gt;METERED FREE WATER FLOW WEIGHTED AVERAGE DATA&lt;/b&gt;
Temperature:          0.0 °F

&lt;b&gt;&lt;u&gt;END OF DAILY REPORT&lt;/u&gt;&lt;/b&gt;

Delivered by: LACT-Pro TM
Coastal Flow Measurement Companies
LACT-Pro@coastalflow.com 713-477-1956</Item>
 </Report>
</Device_Report>
```

33.2.10 <Audit_Log_Index> : Audit log index

Request

```
<Device_Report>
 <Request>
  <Audit_Log_Index/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T12:40:36</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Audit_Log_Index>
  <Item Type="Alarm">1087</Item>
  <Item Type="System">681</Item>
  <Item Type="Operator">1502</Item>
  <Item Type="Metrology">0</Item>
  <Item Type="Security">558</Item>
  <Item Type="Application">0</Item>
 </Audit_Log_Index>
</Device_Report>
```

33.2.11 <Event_Log> : Event audit trail

Request

```
<Device_Report>
 <Request>
  <Event_Log/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T12:47:50</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Event>
  <Item Id="681" Date="2015-11-10T16:46:12" Type="System" User="admin">Printer 2 Network Address changed to
10.0.0.11</Item>
  <Item Id="680" Date="2015-11-10T16:46:04" Type="System" User="admin">Printer 1 Serial Port changed to COM1 -
RS232</Item>
  <Item Id="679" Date="2015-11-06T11:12:28" Type="System">System Restart Cold Start</Item>
  <Item Id="678" Date="2015-11-06T11:12:27" Type="System" User="admin">Remote user admin installed Application
AMR TankPro 0v4 (0v4r189)</Item>
  <Item Id="677" Date="2015-11-03T13:05:07" Type="System">System Restart Cold Start</Item>
  <Item Id="676" Date="2015-11-03T13:05:06" Type="System" User="admin">Remote user admin installed Application
MID Liquid Pulse 1v0 (1v0r57)</Item>
  <Item Id="675" Date="2015-11-02T12:53:16" Type="System">System Restart Cold Start</Item>
  <Item Id="674" Date="2015-11-02T12:53:16" Type="System" User="admin">Remote user admin installed Application
MID Liquid Pulse 1v0 (1v0r54)</Item>
  <Item Id="673" Date="2015-11-02T12:52:20" Type="System">System Restart Warm Start</Item>
  <Item Id="672" Date="2015-10-29T16:24:30" Type="System">System Restart Warm Start</Item>
 </Event>
</Device_Report>
```

Request

```
<Device_Report>
 <Request>
  <Event_Log Type="Operator"/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T12:44:21</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Event>
  <Item Id="1502" Date="2015-11-20T17:00:47" Type="Operator" User="admin">Sample Gravity and Sample Temperature Source changed to </
Item>
  <Item Id="1501" Date="2015-11-20T17:00:44" Type="Operator" User="admin">Manually Measured S&amp;amp;W Source changed to Yes</Item>
  <Item Id="1500" Date="2015-11-20T16:59:50" Type="Operator" User="admin">Press Here To Start Load changed to Start</Item>
  <Item Id="1499" Date="2015-11-20T16:59:22" Type="Operator" User="admin">Tank 2 changed to No</Item>
  <Item Id="1498" Date="2015-11-20T16:59:20" Type="Operator" User="admin">Input Run Ticket Number changed to 1</Item>
  <Item Id="1497" Date="2015-11-20T16:59:18" Type="Operator" User="admin">Input Truck ID changed to Mack</Item>
  <Item Id="1496" Date="2015-11-20T16:59:15" Type="Operator" User="admin">Input Driver ID changed to Fred</Item>
  <Item Id="1495" Date="2015-11-20T16:59:12" Type="Operator" User="admin">Pin Code changed to 1234</Item>
  <Item Id="1494" Date="2015-11-20T16:50:42" Type="Operator" User="admin">Local Panel Language changed to English</Item>
  <Item Id="1493" Date="2015-11-20T16:49:16" Type="Operator" User="admin">Press Here to End Load changed to End Load</Item>
  <Item Id="1492" Date="2015-11-20T16:49:04" Type="Operator" User="admin">Press Here To Start Load changed to Start</Item>
  <Item Id="1491" Date="2015-11-20T16:37:25" Type="Operator" User="admin">Tank 3 changed to No</Item>
  <Item Id="1490" Date="2015-11-20T16:37:14" Type="Operator" User="admin">Input Run Ticket Number changed to 1</Item>
  <Item Id="1489" Date="2015-11-20T16:37:12" Type="Operator" User="admin">Input Truck ID changed to Beta</Item>
  <Item Id="1488" Date="2015-11-20T16:37:10" Type="Operator" User="admin">Input Driver ID changed to George</Item>
  <Item Id="1487" Date="2015-11-20T16:37:04" Type="Operator" User="admin">Start Over changed to No</Item>
  <Item Id="1486" Date="2015-11-20T16:37:01" Type="Operator" User="admin">Tank Option changed to Option 1 - Fixed/Telemetry</Item>
  <Item Id="1485" Date="2015-11-20T16:36:46" Type="Operator" User="admin">Accept Tank or Report to Office changed to Yes</Item>
  <Item Id="1484" Date="2015-11-20T16:35:23" Type="Operator" User="admin">Tank Option changed to Option 1 - Fixed/Telemetry</Item>
  <Item Id="1483" Date="2015-11-20T16:34:52" Type="Operator" User="admin">Input Run Ticket Number changed to 1</Item>
  <Item Id="1482" Date="2015-11-20T16:34:48" Type="Operator" User="admin">Input Truck ID changed to ABC123</Item>
  <Item Id="1481" Date="2015-11-20T16:34:45" Type="Operator" User="admin">Input Driver ID changed to John</Item>
  <Item Id="1480" Date="2015-11-20T16:34:41" Type="Operator" User="admin">Pin Code changed to 1234</Item>
  <Item Id="1479" Date="2015-11-20T16:34:37" Type="Operator" User="admin">Local Panel Language changed to English</Item>
  <Item Id="1478" Date="2015-11-20T16:33:54" Type="Operator" User="admin">Tank Option changed to Option 1 - Fixed/Telemetry</Item>
 </Event>
</Device_Report>
```

33.2.12 <Alarm_Log> : Alarm audit trail

Request

```
<Device_Report>
 <Request>
  <Alarm_Log/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T12:48:46</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Alarm>
  <Item Id="1087" Date="2015-11-23T12:38:08" Type="Alarm">Strainer Blocked Set</Item>
  <Item Id="1086" Date="2015-11-20T15:22:19" Type="Alarm">Strainer Blocked Cleared</Item>
  <Item Id="1085" Date="2015-11-19T15:31:32" Type="Alarm" User="admin">Strainer Blocked Accepted</Item>
  <Item Id="1084" Date="2015-11-19T15:27:56" Type="Alarm">Strainer Blocked Set</Item>
  <Item Id="1083" Date="2015-11-19T15:27:56" Type="Alarm" User="admin">Strainer Blocked Accepted</Item>
  <Item Id="1082" Date="2015-11-19T15:11:28" Type="Alarm">Strainer Blocked Cleared</Item>
  <Item Id="1081" Date="2015-11-19T15:11:18" Type="Alarm">Strainer Blocked Set</Item>
  <Item Id="1080" Date="2015-11-19T15:11:13" Type="Alarm" User="admin">Strainer Blocked Accepted</Item>
  <Item Id="1079" Date="2015-11-19T15:09:11" Type="Alarm">Strainer Blocked Cleared</Item>
  <Item Id="1078" Date="2015-11-19T15:09:04" Type="Alarm">Strainer Blocked Set</Item>
  <Item Id="1077" Date="2015-11-19T14:57:47" Type="Alarm" User="admin">Strainer Blocked Accepted</Item>
  <Item Id="1076" Date="2015-11-19T14:57:37" Type="Alarm">Strainer Blocked Cleared</Item>
  <Item Id="1075" Date="2015-11-19T14:57:30" Type="Alarm">Strainer Blocked Set</Item>
 </Alarm>
</Device_Report>
```

33.2.13 <Historical_Index> : Historical index

Request

```
<Device_Report>
 <Request>
  <Historical_Index/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-03T02:29:29</Date>
  <RTU_Name>LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Historical_Index>
  <Item Zone="1" Date="2015-12-02T07:27:13">49220</Item>
  <Item Zone="2" Date="2015-12-03T02:25:00">5561</Item>
  <Item Zone="3" Date="2015-12-02T07:27:13">63</Item>
 </Historical_Index>
</Device_Report>
```

33.2.14 <Historical_Data> : Historical data

To retrieve Zone 1 information, no Zone information is required:

Request

```
<Device_Report>
 <Request>
  <Historical_Data/>
 </Request>
</Device_Report>
```

Or for a specific zone:

Request

```
<Device_Report>
 <Request>
  <Historical_Data Zone="1"/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-20T11:24:34</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308391EC</Serial_Number>
 </Header>
 <Historical_Data>
  <Slots>126882,126945,126822,136360,146836,144051,144052,144053_2,144054,Unused,148401,Unused,Unused</Slots>
 </Historical_Data>
</Device_Report>
```

To retrieve the timestamp data for Zone 1 information, no Zone information is required:

Request

```
<Device_Report>
 <Request>
  <Historical_Data>
   <Data/>
  </Historical_Data>
 </Request>
</Device_Report>
```

Or for a specific zone, can be requested:

Request

```
<Device_Report>
 <Request>
  <Historical_Data Zone="3">
   <Data/>
  </Historical_Data>
 </Request>
</Device_Report>
```

Reply

```
 </Header>
 <Historical_Data Zone="3">
  <Slots>146694,146931,146980,146710,146938,146987,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Slots>
  <Value Date="2015-11-20T15:44:00">44.2701110527039,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:43:00">44.2675876918181,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:42:00">44.2701595788748,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:41:00">44.2749636697919,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:40:00">44.2653069617868,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:39:00">44.2711301022924,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:38:00">44.2710330499507,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:37:00">44.2668112730841,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:36:00">44.2672965347929,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:35:00">44.2679759011852,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:34:00">44.2671994824511,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:33:00">44.2753033529881,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:32:00">44.2743813557414,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:31:00">44.2699169480204,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:30:00">44.2752063006464,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:29:00">44.268461162894,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:28:00">44.2755945100134,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:27:00">44.273313779982,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:26:00">44.2730711491276,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:25:00">44.2735078846655,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:24:00">44.2778267138739,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:23:00">44.2756915623552,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:22:00">44.2801074439053,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:21:00">44.2834072235251,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:20:00">44.281417650519,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:19:00">44.2781663970701,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
  <Value Date="2015-11-20T15:18:00">44.2813691243481,0,0,0,0,0,Unused,Unused,Unused,Unused,Unused,Unused,Unused</Value>
 </Historical_Data>
</Device_Report>
```

33.2.15 <Live_Data> : Read / Write real-time data

Read Numeric Value:

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="151946"/>
  </Live_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T14:04:56</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="151946" Unit="in" UnitId="149698" Raw="0x0000000000000000">0</Item>
 </Live_Data>
</Device_Report>
```

Write Numeric Value:

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="151946">10</Item>
  </Live_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T14:05:27</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="151946">10</Item>
 </Live_Data>
</Device_Report>
```

Read String:

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="138654"/>
  </Live_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T14:06:23</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="138654">COM1 - RS232</Item>
 </Live_Data>
</Device_Report>
```

Write String – Example 1:

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="151960">""HELLO""</Item>
  </Live_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T15:51:43</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="151960">&amp;quot;HELLO&amp;quot;</Item>
 </Live_Data>
</Device_Report>
```

Write String – Example 2:

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="151960">"HELLO"</Item>
  </Live_Data>
 </Request>
</Device_Report>
```

Or

Request

```
<Device_Report>
 <Request>
  <Live_Data>
   <Item Name="151960">HELLO</Item>
  </Live_Data>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T15:52:53</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="151960">HELLO</Item>
 </Live_Data>
</Device_Report>
```

Reply if not valid:

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T14:08:55</Date>
  <RTU_Name>Multi-Tank</RTU_Name>
  <Serial_Number>C8A030838DC0</Serial_Number>
 </Header>
 <Live_Data>
  <Item Name="138654">Invalid setting</Item>
 </Live_Data>
</Device_Report>
```

33.2.16 <Time_Sync> : Time sync

Request

```
<Device_Report>
 <Request>
  <Time_Sync/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-25T19:25:56</Date>
  <RTU_Name>C8A0308391BF</RTU_Name>
  <Serial_Number>C8A0308391BF</Serial_Number>
 </Header>
 <Time_Sync>
  <Item Name="NTP" Id="138" Type="String" WriteId="138" Table="Disabled,Enabled">Enabled</Item>
  <Item Name="NTP Server" Id="139" Type="IP" WriteId="139" ActiveId="138"
ActiveValue="Enabled">188.39.98.165</Item>
  <Item Name="Time" Id="144" Type="DateTime" WriteId="144">2015-11-25T19:25:56</Item>
  <Item Name="Time Offset" Id="141" Type="String" WriteId="141">+04:00</Item>
  <Item Name="Date Format" Id="130" Type="String" WriteId="130" Table="YYYY/MM/DD,DD/MM/YYYY,MM/DD/YYYY">YYYY/MM/
DD</Item>
  <Item Name="DST Start Date" Id="134" Type="String" WriteId="134">05/15</Item>
  <Item Name="DST End Date" Id="135" Type="String" WriteId="135">12/16</Item>
  <Item Name="DST Hour" Id="136" Type="String" WriteId="136" Table="01:00,02:00">02:00</Item>
 </Time_Sync>
</Device_Report>
```

33.2.17 <Network> : Network information

Request

```
<Device_Report>
 <Request>
  <Network/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T05:21:58</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Network>
  <Item Port="1">
   <Item Name="Method" Id="100" Type="String" WriteId="100" Table="DHCP,Static">Static</Item>
   <Item Name="Address" Id="4" Type="IP" WriteId="4">10.0.150.6</Item>
   <Item Name="Netmask" Id="114" Type="IP" WriteId="114">255.255.0.0</Item>
   <Item Name="Gateway" Id="120" Type="IP" WriteId="120">10.0.0.1</Item>
  </Item>
  <Item Port="2">
   <Item Name="Method" Id="105" Type="String" WriteId="105" Table="Off,Static">Static</Item>
   <Item Name="Address" Id="5" Type="IP" WriteId="5">10.250.250.250</Item>
   <Item Name="Netmask" Id="117" Type="IP" WriteId="117">255.255.255.0</Item>
  </Item>
 </Network>
</Device_Report>
```

33.2.18 <Printers> : Printer information

Request

```
<Device_Report>
 <Request>
  <Printers/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T05:22:54</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Printers>
  <Item Index="1">
   <Item Name="Method" Id="300" Type="String" WriteId="300" Table="None,Network (Postscript),Serial (Codepage
437)">Serial (Codepage 437)</Item>
   <Item Name="Name" Id="310" Type="String" WriteId="310">Ticket</Item>
   <Item Name="Serial Port" Id="301" Type="String" WriteId="301" ActiveId="300" ActiveValue="Serial"
Table="None,COM1 - RS232,COM3 - RS422 using RS422/232 Converter">COM1 - RS232</Item>
   <Item Name="Serial Baud" Id="303" Type="String" WriteId="303" ActiveId="300" ActiveValue="Serial">9600</Item>
   <Item Name="Network Address" Id="302" Type="IP" WriteId="302" ActiveId="300" ActiveValue="Network"></Item>
   <Item Name="Network Port" Id="304" Type="Int" WriteId="304" ActiveId="300" ActiveValue="Network">9100</Item>
  </Item>
  <Item Index="2">
   <Item Name="Method" Id="320" Type="String" WriteId="320" Table="None,Network (Postscript)">Network
(Postscript)</Item>
   <Item Name="Name" Id="330" Type="String" WriteId="330">OfficeHP</Item>
   <Item Name="Network Address" Id="322" Type="IP" WriteId="322" ActiveId="320"
ActiveValue="Network">10.0.0.107</Item>
   <Item Name="Network Port" Id="324" Type="Int" WriteId="324" ActiveId="320" ActiveValue="Network">9100</Item>
  </Item>
  <Item Index="3">
   <Item Name="Method" Id="340" Type="String" WriteId="340" Table="None,Network (Postscript)">Network
(Postscript)</Item>
   <Item Name="Name" Id="350" Type="String" WriteId="350">OK City</Item>
   <Item Name="Network Address" Id="342" Type="IP" WriteId="342" ActiveId="340" ActiveValue="Network">10.0.0.11</
Item>
   <Item Name="Network Port" Id="344" Type="Int" WriteId="344" ActiveId="340" ActiveValue="Network">9100</Item>
  </Item>
 </Printers>
```

33.2.19 <Users> : User information

Request

```
<Device_Report>
 <Request>
   <Users/>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-11-23T06:08:45</Date>
  <RTU_Name>Coastal LACT MicroCube Demo</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Users Levels="Metrology,Admin,Technician,Operator,Management,Anyone">
  <Item Name="admin" Level="Admin"/>
  <Item Name="Driver" Level="Operator"/>
 </Users>
</Device_Report>
```

33.2.20 Other Examples

XML polls can be merged into a larger poll

Example:

Request

```
<Device_Report>
 <Request>
  <Identify/>
  <Alarms/>
  <Users/>
  <Report_Index>
   <Item Name="Bill Of Lading"/>
  </Report_Index>
 </Request>
</Device_Report>
```

Reply

```
<Device_Report>
 <Header>
  <Date>2015-12-11T05:22:03</Date>
  <RTU_Name>MOBs Test Machine</RTU_Name>
  <Serial_Number>C8A0308399A3</Serial_Number>
 </Header>
 <Identify>
  <Hostname>MOBs Test Machine</Hostname>
  <Comment>MOBs Test Machine</Comment>
  <Application>AMR LACT 5v2</Application>
  <AppVersion>5v2r37</AppVersion>
  <AppSetup>Base*</AppSetup>
  <AppChecksum>63160FB875884B76</AppChecksum>
  <ConstantsChecksum>0000000000000000</ConstantsChecksum>
  <Version>4v3r0-6156-BETA</Version>
  <Altera>HW 2.00 SW 2.05</Altera>
  <ExpansionCardDate>15/10/12 14:07:23</ExpansionCardDate>
  <ExpansionCardIdent>151012 83XK keithley.cla</ExpansionCardIdent>
  <Uptime>3 days, 23:57:25</Uptime>
  <Serial_Number>C8A0308399A3</Serial_Number>
  <Link_Status_1>Up</Link_Status_1>
  <IP_Address_1>10.0.150.6</IP_Address_1>
  <Link_Status_2>Down</Link_Status_2>
  <IP_Address_2>10.250.250.250</IP_Address_2>
  <Status>Healthy</Status>
  <Report_Index>
   <Item Name="Bill Of Lading" Zone="5" Date="2015-12-08T11:09:48">193</Item>
   <Item Name="Snapshot" Zone="99">0</Item>
   <Item Name="Daily Report" Zone="4" Date="2015-12-11T00:00:00">257</Item>
   <Item Name="Monthly Report" Zone="16" Date="2015-12-01T00:00:00">4</Item>
   <Item Name="Duplicate Report" Zone="15" Date="2015-11-11T07:46:12">2</Item>
   <Item Name="Metering Tech (Sampler Can Pull)" Zone="7" Date="2015-11-11T08:55:33">87</Item>
   <Item Name="Metering Tech (Oil Prove)" Zone="7" Date="2015-11-11T08:54:35">86</Item>
   <Item Name="Metering Tech (Water Prove)" Zone="7" Date="2015-11-11T08:45:44">83</Item>
   <Item Name="Metering Tech (Bias Adjust)" Zone="7" Date="2015-11-11T08:53:27">85</Item>
  </Report_Index>
  <Audit_Log_Index>
   <Item Type="Alarm">605</Item>
   <Item Type="System">405</Item>
   <Item Type="Operator">2323</Item>
   <Item Type="Metrology">2</Item>
   <Item Type="Security">508</Item>
   <Item Type="Application">57</Item>
  </Audit_Log_Index>
 </Identify>
 <Alarms></Alarms>
 <Users Levels="Metrology,Admin,Technician,Operator,Management,Anyone">
  <Item Name="admin" Level="Admin"/>
  <Item Name="any" Level="Anyone"/>
 </Users>
 <Report_Index>
  <Item Name="Bill Of Lading">
   <Report Date="2015-12-08T11:09:48" Id="193"/>
   <Report Date="2015-12-01T11:42:08" Id="192"/>
   <Report Date="2015-11-26T06:05:26" Id="191"/>
   <Report Date="2015-11-25T08:59:14" Id="190"/>
  </Item>
 </Report_Index>
</Device_Report>
```