

ELIPSE SOFTWARE

IEC 61850 Client System

PROTOCOL IMPLEMENTATION CONFORMANCE EXTRA
INFORMATION - PIXIT

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PROTOCOL IMPLEMENTATION DOCUMENT

This document specifies the protocol implementation extra information for testing (PIXIT) of the IEC 61850 Client Driver version 3.0.1 for Elipse E3 / Elipse Power, referred throughout the document as “**System**”.

Together with the PICS and the MICS the PIXIT forms the basis for a conformance test according to IEC 61850-10.

Contents of this document: Each Table specifies the PIXIT for each applicable ACSI service model as structured in IEC 61850-10.

PIXIT for Configuration

ID	Ed	Description	Value / Clarification
Cf1	1,2	Describe how the client handles nameplate configuration revision mismatches	<p>The option “Check Nameplate Mismatches” shall be enabled. The System creates “cache” files for each Logical Device, including on each file the nameplate information.</p> <p>Cache files created through ICD/SCD files will contain empty nameplate information.</p> <p>On system startup or device reconnection, if the option is checked, a comparison between the cache value and current value will be performed, and in mismatch case a new cache will be created automatically.</p>
Cf2	1,2	Describe how the client handles report control block configuration revision mismatches	<p>The option “Check Report Revision Mismatch” shall be enabled. The system creates “cache” files for each Logical Device, including on each file the current Report ConfRev information, for the reports the system is using.</p> <p>On system startup or device reconnection, if the option is checked, a comparison between the cache value and current value will be performed, and in mismatch case a new cache will be created automatically.</p>

PIXIT for Association model

ID	Ed	Description	Value / Clarification
As1	1,2	Guaranteed number of servers that can set-up an association simultaneously (one association per server)	Each Elipse IEC 61850 driver can hold until 25 61850 servers. Each Elipse E3 or Elipse Power System can hold several drivers, but for certification purposes, it was tested with 4 drivers with 25 servers each, totalizing 100 61850 Servers.
As2	1,2	Lost connection detection time range (default range of TCP_KEEPALIVE is 1 – 20 seconds)	Configurable. The system has two additional features for lost connection detection: <ul style="list-style-type: none"> - A configurable timer for no responses from server, which forces a disconnection (“Disconnect if non-responsive”); A configurable timer for a MMS Status Request on idle channel, which forces Server response to be sent. (Status Timer). The “Disconnect if non-responsive Timer” shall be greater than Status Timer.
As3	1,2	Lost (abort) connection retry time	Configurable. Can vary between 1 and 99999 seconds.
As4	3	Is authentication supported	No
As5	1,2	What is the maximum and minimum MMS PDU size	Maximum = 65000 Minimum = 16000
As6	1,2	What is the typical startup time after a power supply interrupt	After windows startup, no more than 30 seconds for a typical 100 IED application. (It can vary depending on the number of servers mapped).
As7	1,2	How does the client disconnect from the server?	Only release is implemented.
		How does the client behave in case of a lost connection with (one of) the associated servers?	System option “Retry Failed Connection every ... seconds” shall be enabled, and “Give up after.... Seconds” shall be disabled. After successful reconnection, the system will try to reconnect to the same reports it was using before. In any (or all) are unavailable, other reports can be searched or the items under monitoring can be polled (depends on configuration).

ID	Ed	Description	Value / Clarification
		How does the client behave when a server denies an Association request by the client?	System options “Disconnect if non-responsive for ... seconds” and “Retry Failed Connection every ... seconds” shall be enabled. In this case a disconnection and reconnection takes place until a successful association happens. This situation can be monitored at the client system, indicating the connection status of each Server, by means of a ServerStatus and LogicalDeviceStatus tags.
		Does the client automatically reconnect to the configured servers after startup (Automatic statup)?	Yes

PIXIT for Server model

ID	Ed	Description	Value / Clarification
Sr1	1,2	Maximum object identification length	4000 octets
Sr2	1,2	Does client support auto description	Yes. It saves each server database into files with extension .LD (one file per logical device per server). If not found at startup, .LD files are created from actual server contents.
Sr3	1,2	Describe how to view data values	At design time (Elipse Power Studio), users can call Tag Browser window to import from offline or online, by just dragging the desired tags to the driver. After that click at the run button and values can be viewed.

ID	Ed	Description	Value / Clarification
Sr4	1,2	What analogue value (MX) quality bits are used in the client	Y Good, Y Invalid, Y Reserved, Y Questionable Y Overflow Y OutofRange Y BadReference Y Oscillatory Y Failure Y OldData Y Inconsistent Y Inaccurate Y Process Y Substituted N Test N OperatorBlocked
Sr5	1,2	Which status value (ST) quality bits are used in the client	Y Good, Y Invalid, Y Reserved, Y Questionable Y BadReference Y Oscillatory Y Failure Y OldData Y Inconsistent Y Inaccurate Y Process Y Substituted N Test N OperatorBlocked

ID	Ed	Description	Value / Clarification
Sr6	1,2	Describe how to view/display quality values	<p>Quality bits are mapped to Quality property of each tag variable. The Quality property follows OPC DA specification, and has a fixed byte mapping, following the bits below:</p> <p>QQSSSSL</p> <p>QQ: Mapped to Good, Invalid, Reserved and Questionable bits at the order: Good, Bad, Bad, Uncertain OPC values. SSSS: Maps all other bits. LL: not mapped</p> <p>Good, Process = Good non specific, 192 Good, Substituted or Operator Blocked = Local Override, 196</p> <p>Invalid, Overflow = Bad, non specific, 0 Invalid, Out of Range = Bad, Config Error, 4 Invalid, Bad Reference = Bad, Config Error, 4 Invalid, Oscillatory = Bad, Sensor Failure, 16 Invalid, Failure = Bad, Device Failure, 12 Invalid, Old Data = Bad, Last Known Value, 20 Invalid = Bad, non specific, 0</p> <p>Questionable, Out of Range or Bad reference or Oscillatory = Uncertain, Sensor not accurate = 80 Questionable, Old Data = Uncertain, Last Usable Value = 68 Questionable, Inaccurate or Inconsistent = Uncertain, Sensor not Accurate = 80 Questionable, Overflow = Uncertain, EU Exceeded = 84 Questionable = Uncertain, non specific = 64</p> <p>Quality codes are carried together with timestamp and value and can be configured as association to any graphical object in Elipse E3/Power.</p> <p>Test bit is not mapped.</p>
Sr7	1,2	Describe how to force a SetDataValues request	<p>Any Tag mapped to a Server item performs a SetDataValues request upon a Write operation, which can be done with a simple assignment operator, by link association or scripting.</p>

ID	Ed	Description	Value / Clarification
Sr8	1,2	Describe how to force a GetDataValues request	If there is no report configured, a variable issues a GetDataValues request at specified scan rate, when the option "Poll tags not found in any report" is set.
Sr9	1,2	Describe how to force a GetAllDataValues request	Not Supported.
Sr10	1,2	Does the client support writing blkEna values?	Yes

ID	Ed	Description	Value / Clarification
Sr11	1,2	<p>Describe how the client behaves in case of:</p> <ul style="list-style-type: none"> - GetDataDefinition response- - GetDataDefinition response+ with more or less attributes as expected - GetLogicalDeviceDirectory response- - GetAllDataValues response- - GetAllDataValues response+ with more or less attributes as expected - GetDataValues response- - GetDataValues response+ with more or less attributes as expected - SetDataValues response- 	<p>On startup, the system can perform in 2 ways.</p> <p>1 – When it finds the Logical Device cache files and only starts reading values;</p> <p>2 – When it rebuilds all Server information from scratch;</p> <p>A LogicalDeviceDirectory response- in both cases makes the startup procedure return to the “Rebuild Cache” beginning, until the system finishes correctly the description of Server items.</p> <p>This situation can be monitored by means of a ServerStatus and LogicalDeviceStatus tags, which indicates the performed steps.</p> <p>The system can also check the existence of a particular Logical Device by writing a LD Name to a tag with Item = “CompareLogicalDeviceDirectory”, and in case of mismatch starts the Cache Rebuild process.</p> <p>The same thing for LN/DO/DA (DataDefinition response-) by writing an Item name to a tag with Item = “CompareDataDefinition”.</p> <p>GetAllDataValues response- GetDataValues response- SetDataValues response-</p> <p>Doesn’t imply in a cache rebuild. The matching parts of a multi-item response (ex: with more or less elements than expected) can be processed normally, whenever possible.</p> <p>Obs: Please note that up to the point that data types of the response matches with the expected data types, the data values will be processed normally, which can lead to a mismatch in values (i.e. a data attribute to receive a value from a different data attribute).</p>

ID	Ed	Description	Value / Clarification
Sr12	1,2	Which time quality attributes from the server are used in the client	Y Leap Second Known, Y ClockFailure Y Clock not synchronized Y Accuracy
Sr13	1,2	Describe how to view time quality attributes	User can create a tag mapped to a DataAttribute property with the last part of the name as « .TimeQuality ». The tag value will be the the time quality byte as it is.

PIXIT for Data set model

ID	Ed	Description	Value / Clarification
Ds1	1,2	Describe how to force a GetDataSetValues request	When building the Logical Device cache files (autodescription), an internal operation identifies the reports and it's datasets and sends the GetDataSetValues request. The list of dataset members is saved at the cache files, in order to speed up startup procedure. This operation can also be requested programmatically or manually for specific datasets as described at product documentation.
Ds2	1,2	Describe how to force a SetDataSetValues request	It is possible to request this operation writing to a specific tag with the Item property = "SetDataSetValues". It will get the current values of all dataset members.

ID	Ed	Description	Value / Clarification
Ds3	1,2	Describe how to force a DeleteDataSet request	<p>If a dynamic Dataset creation is enabled, Datasets created by the system which doesn't match the current configuration are automatically deleted and rebuilt.</p> <p>You can also request this operation writing to a specific tag with the Item property = "DeleteDataSet".</p> <p>The system will attempt to delete the dataset 2 times in case the deletion fails (e.g. when the dataset is still assigned to a RCB).</p>
Ds4	1,2	<p>Describe how the client handles following dataset mismatches between the SCL and the data sets exposed via MMS:</p> <ul style="list-style-type: none"> (1) new dataset element (2) missing dataset element (3) Reordered dataset members in a dataset of a different data type (4) Reordered dataset members in a dataset of the same data type 	<p>Dataset mismatches are enabled by the "Check Report Revision Mismatch" option, by checking ConfRev parameter.</p> <p>If ConfRev parameter of a report which is using the dataset is not changed by the server, the system can't detect reordered dataset members in a dataset when they are of the same data type (4), and processes the report messages normally.</p> <p>Dynamic Datasets (created by the system) are checked on a per-member basis after reconnection. Any of the mismatches informed forces a Logical Device cache file rebuild.</p>
Ds5	1,2	<p>Describe how the client behaves in case of:</p> <ul style="list-style-type: none"> - GetLogicalNodeDirectory(DATA-SET) response- - GetDataSetDirectory response- - GetDataSetValues response- - SetDataSetValues response- 	<p>That report will become unusable by the application. If this happens to all reports, only polling option will be available for data reading.</p>

ID	Ed	Description	Value / Clarification
Ds6	1,2	<p>Maximum name length for dataset</p> <p>Maximum name length for dataset member, including LD and FC</p>	<p>512</p> <p>512</p>
Ds11	1,2	<p>Describe how to force a CreateDataSet request</p> <ul style="list-style-type: none"> - non-persistent - persistent 	<p>Yes, there is a procedure to declare at configuration time or runtime a list of datasets, which can be persistent or nonpersistent.</p> <p>Non-persistent datasets shall start with '@' character.</p> <p>Before creating a dataset, the system will try 3 times to retrieve its contents in order to check if dataset exists before issuing the creation command.</p>
Ds12	1,2	<p>Describe how to force a DeleteDataSet request</p> <ul style="list-style-type: none"> - non-persistent - persistent 	<p>If a dynamic Dataset creation is enabled, Datasets created by the system which doesn't match the current configuration are automatically deleted and rebuilt.</p> <p>You can also request this operation writing to a specific tag with the Item property = "DeleteDataSet".</p> <p>The system will attempt to delete the dataset 2 times in case the deletion fails (e.g. when the dataset is still assigned to a RCB).</p>

ID	Ed	Description	Value / Clarification
Ds13	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - CreateDataSet response- - DeleteDataSet response- 	<p>The system is only able to create datasets using a fixed list of reports informed by the user (UserDefinedReportList). In this case if the dataset creation or deletion is not possible, in a way that some or all reports can't be properly enabled, the system will attempt 2 times and retry every 30 seconds.</p> <p>If a second driver instance tries to use the same datasets created by a first driver instance, it checks if dataset contents are the same, and start using it if positive. If they are different, the second driver will try to delete the dataset first, which will probably fail.</p>

PIXIT for Substitution model

ID	Ed	Description	Value / Clarification
Sub1	1,2	Describe how to substitute a value	Not supported

PIXIT for Setting group control model

ID	Ed	Description	Value / Clarification
Sg1	1,2	How can the client be forced to send a GetLogicalNodeDirectory(SGCB) request	It is performed when creating the LD cache file, when it does not exist, or when it is being rebuilt.
Sg2	1,2	Describe how to change the active setting group	By Writing to the ActSG property the desired Setting Group Index.

ID	Ed	Description	Value / Clarification
Sg3	1,2	Describe how to get the actual setting group values	By reading the ActSG property, using a report or polling.
Sg4	1,2	Describe how to edit setting group values	Not supported
Sg5	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - GetSGCBValues response- - SelectEditSG response- - SetEditSGValue response- - SelectActiveSG response- - ConfirmEditSGValues response- - The configured SG differs from the actual setting group 	GetSGCBValues-: Bad quality is informed on each variable. SelectActiveSG-: Write error response is returned to the caller (scripting or HMI Screen). The other cases are not supported.
Sg6		Does the client read the optional ResvTms value?	Not supported

PIXIT for Reporting model

ID	Ed	Description	Value / Clarification
Rp1	1,2	Does the client search for RCB in all logical nodes? If not, specify the logical nodes	All logical nodes
Rp2	1,2	Which dynamic RCB attributes are/can be configured by the client	RptID Y DataSet Y Optional fields Y Trigger conditions Y Buffer time Y Integrity period Y
Rp3	1	Does the client supports IED's with indexed and non-indexed report control blocks (RCB)	BRCB indexed Y BRCB not indexed Y URCB indexed Y UCB not indexed Y

ID	Ed	Description	Value / Clarification
Rp4	1,2	The supported trigger conditions are	integrity Y data change Y quality change Y data update Y general interrogation Y
Rp5	1,2	The minimum required optional fields are	sequence-number N report-time-stamp N reason-for-inclusion N data-set-name Y data-reference N buffer-overflow N entryID N confRev N
Rp6	1,2	Does the client support segmented reports	Y
Rp7	1	Does the client support pre-assigned RCB	Y, but it can't be read from SCD.
Rp8	1	Does the client support reported data set containing structured data objects or data attributes?	reporting of data objects Y reporting of data attributes Y
Rp9	1,2	Describe how the client does respond when a previously used URCB is reserved by another client for: <ul style="list-style-type: none"> Indexed URCB with max>1 configured in SCL (static reporting) Indexed URCB with max=1 configured in SCL (static reporting) URCB not configured in SCL (dynamic reporting) 	Using the default configuration, it will search for a free URCB and configure it in all 3 cases. User defined reports can also be used. In case of a non-configured URCB (Dataset is empty), and the DataSet property of the report is not defined at the configuration file (RPT), the report cannot be enabled. In this case, because RptEna is FALSE, it will not retry to enable the report anymore.

ID	Ed	Description	Value / Clarification
Rp10	1,2	<p>Describe how the client does respond when a previously used BRCB is reserved by another client for:</p> <ul style="list-style-type: none"> Indexed BRCB with max>1 configured in SCL (static reporting) Indexed BRCB with max=1 configured in SCL (static reporting) BRCB not configured in SCL (dynamic reporting) 	<p>Using the default configuration, it will search for a free BRCB and configure it in all 3 cases.</p> <p>Fixed reports can also be defined.</p>
Rp11	1,2	<p>Describe how the client does respond on a SetBRCBValues(EntryID) respond-</p>	<p>If the system is configured to write EntryID property when enabling a BRCB and it fails, it will continue normally with that report, trying to set other configured properties and finally the RptEna and then a GI.</p> <p>Additionally, If the option "UserDefinedReportList" is set, the user can configure whether to write PurgeBuf or not, based on the result of the EntryID write operation.</p>

ID	Ed	Description	Value / Clarification
Rp12	1,2	Describe how the client does respond when a report has an unknown: dataset, RptID, unexpected number of dataset entries, and/or unexpected data type format entries	<p>Dataset: Unless if using the option “User Defined Datasets” (where the system will associate a dataset with a report dynamically), a report with unknown dataset fails, and it’s not possible to be enabled.</p> <p>RptID: The system sets the RptID before enabling, but continues normally to set other attributes if it fails.</p> <p>An unexpected number of dataset entries at report reception makes the message to be discarded, from the point where it exceeds the maximum number of items expected or when Data type mismatches are found.</p> <p>Data points processed OK until the mismatch is found are updated normally.</p> <p>If</p>

ID	Ed	Description	Value / Clarification
Rp13	1,2	Describe how the client detects reporting configuration changes (mismatches). Does it check the “configuration revision” attributes and/or does it check the dataset members? Is the dataset update done online or offline?	<p>Check ConfRev Y</p> <p>Check dataset members Y</p> <p>There is a standard system option “Check Report Mismatches” that checks the configuration revision attribute only.</p> <p>The system also checks database members if the dataset is defined at client-side.</p> <p>Is a mismatch is found, the system re-scans the Server contents and updates the cache.</p>
Rp14	1,2	Describe how to force the client to change the RCB buffer time	The user can create a tag that writes this parameter when using the UserDefinedReportList mode.
Rp15	1,2	Does client set server TrgOps.GI prior to first issuance of GI command?	Y
Rp16	1,2	Describe how to force the client to send the GI request	A polled GI can be configured by defining a global time interval (for all reports).
Rp17	1,2	Describe how to force the client to enable a RCB	Through the option “User Defined Report List” the user can define the specific reports the client will try to enable.

ID	Ed	Description	Value / Clarification
Rp18	1,2	Describe how the client does respond when a report control block is renamed or deleted <ul style="list-style-type: none"> - Does it prevent reading the deleted RCB - If it reads the missing RCB, how does it handle the GetURCBValues or GetBRCBValues response- 	<p>If it can't read the missing RCB it will try the next one at the "User Defined Report List". If the User Report List option is not used, it will try to dynamically discover another report which contains the active variables.</p> <p>If no report is available, it can poll the active variables if the option "Poll tags not found in any report" is set.</p>
Rp19	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - SetRCBValues response- - Unsupported optional fields - Unsupported trigger condition(s) 	<p>If SetRCBValues fails for any property except RptEna, it will Enable the report and process it normally.</p> <p>If SetRCBValues fails for RptEna, it will try the next report at the "User Defined Report List", and if this option is not used, it will try to discover another report which contains the active variables.</p> <p>If no report is available, it can poll the active variables if the option "Poll tags not found in any report" is set.</p> <p>All optional fields and trigger conditions are supported.</p>
Rp20	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - Buffer overflow 	The system ignores the overflow flag and processes the report normally

ID	Ed	Description	Value / Clarification
Rp21	1,2	Describe how to force the client to send SetBRCBValues request for <ul style="list-style-type: none"> - EntryID - PurgeBuf 	<p>There is a system option to save the last EntryID values of all reports in a file per Server (ServerName.EID). On startup EntryIDs are read from this file and forced to the report before enabling.</p> <p>PurgeBuf option can be defined if using the option "R/W Report List File". For each report entry, the file can contain specification about what to do with the properties PurgeBuf, BufTm, ResvTms, etc..</p> <p>Specifically the PurgeBuf attribute can be chosen from 0 (don't write), 1 (write always) and 2 (write if EntryID set fails).</p>
Rp22	1,2	Does the client support writing resvTms	Only if configured through the option "User Defined Report List".
Rp23	1,2	Does the client support reading owner	N
Rp24	2	Does the device function only as test equipment?	N

PIXIT for Logging model

ID	Ed	Description	Value / Clarification
Lg1	1,2	Does the client search for LCB in all logical nodes? when not specify the logical nodes	Not supported
Lg2	1,2	Describe how to change LCB attributes	Not supported
Lg3	1,2	Describe how to force the client to enable a LCB	Not supported
Lg4	1	Does the client support sending QueryLogByTime and/or QueryLogAfter	QueryLogByTime N QueryLogAfter N

Lg5	2	Describe how to force the client to change GLOG settings	Not supported
Lg6	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - Renamed LCB - Removed LCB - Renamed Logical Device - Renamed LOG 	Not supported
Lg7	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - GetLCBValues response- - GetLogStatusValues response- - SetLCBValues response- 	Not supported

PIXIT for GOOSE control block model

ID	Ed	Description	Value / Clarification
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PIXIT for Control model

ID	Ed	Description	Value / Clarification
Ctl1	1,2	What control modes are supported	Y status-only Y direct-with-normal-security Y sbo-with-normal-security Y direct-with-enhanced-security Y sbo-with-enhanced-security
Ctl2	1,2	Is Time activated operate (operTm) supported	Y
Ctl3	1,2	Is "operate-many" supported	N
Ctl4	1,2	Can the client set the test flag?	Y
Ctl5	1,2	What check conditions can be set	Y synchrocheck Y interlock-check
Ctl6	1,2	Which originator categories are supported and what is the originator identification?	Bay, Station, Remote and Maintenance. Originator ID is "ELIPSE IEC 61850".

ID	Ed	Description	Value / Clarification
Ctl7	1,2	Describe if and how the client sets/increments the ctlNum	It increments ctlNum everytime a new Operate message is created. (incremented before trying to send).
Ctl8	1,2	What does the client when it receives a LastApplicationError and describe how to view the additional cause?	Every command operation has a Stat block with 2 properties: Status and StatusText, with corresponding code and text of the Additional Cause, which can be used at customer application for scripting or visualization at HMI Screen.
Ctl9	1,2	What does the client when its receives a Select, SelectWithValue or Operate respond negative ?	It returns the failure to the caller, allowing to treat the negative condition by scripting, or at HMI screen.
Ctl10	1,2	Can the client change the control model via online services?	Yes, by writing the CtlModel property.
Ctl11	1	What does the client when the ctlModel is not initialized in the SCL?	If it can't be read, commands are not possible for this object. After being read, commands can be tried independently from CtlModel value.
Ctl12	1,2	What does the client when the ctlModel in SCD and in SERVER SIMULATOR is different?	This situation is not checked, the system will try to send the commands, and return the operation success or failure.
Ctl13	1,2	Describe how to view a <ul style="list-style-type: none"> - CommandTermination request+ - CommandTermination request- - TimeActivatedOperateTermination request+ and request- 	It updates the command block with the status, which triggers an OnRead event at the application.

PIXIT for Time and time synchronization model

ID	Ed	Description	Value / Clarification
Tm1	1,2	Describe how to view the internal time & quality or how to expose the timestamp and timestamp quality via the IEC 61850 interface	<p>View: in Operate request</p> <p>Internal Time and Time Quality can also be visualized through the tag "InternalClock".</p> <p>The server TimeQuality of each DO/DA can be seen by creating a tag replacing the DA "t" by "timeQuality". Example:</p> <p>Item : "DJXCBR2\$ST\$Mod\$timeQuality" corresponds to "DJXCBR2\$ST\$Mod\$t" time quality.</p>
Tm2	1,2	What time quality bits are supported	<p>Y LeapSecondsKnown</p> <p>N ClockFailure</p> <p>Y ClockNotSynchronized</p>
Tm3	1,2	What is the behavior when the time synchronization signal/messages are lost	<p>The system uses a fixed timeQuality of 10 (Ah) when issuing SetDataValues commands.</p> <p>If time sync is lost, no action is performed at protocol level, the condition can only be visualized at application.</p>
Tm4	1,2	When is the quality bit "Clock failure" set?	Clock Failure bit is never set.
Tm5	1	When is the quality bit "Clock not synchronized" set?	When using a timeQuality tag monitoring and connection with NTP Server is lost.

PIXIT for File transfer model

ID	Ed	Description	Value / Clarification
Ft1	1,2	Describe when or how to force the client to request	Only COMTRADE Files are searched and downloaded

ID	Ed	Description	Value / Clarification
		GetServerDirectory(FILE) and what it does with the responded filenames	<p>automatically, by setting the option "Save Comtrade Files".</p> <p>Other type of operations can be performed by calling specific tags, for operations like "GetFileDirectory" or "GetFile".</p>
Ft2	1,2	Does the client uses a wildcard in the GetServerDirectory(FILE) request	Y, wildcard = "*" or ".*"
Ft3	1,2	Does the client support IED's that include the path in the file name in the GetServerDirectory(FILE) respond?	Y/N path included
Ft4	1,2	Does the client support IED's that use the file separator	Y/N "/" Y/N "\"
Ft5	1,2	What is the maximum file name size including path	512 bytes
Ft6	1,2	Can the client read a file with size 0	Y
Ft7	1,2	Are directory/file names case sensitive	Not Case sensitive
Ft8	1,2	Maximum file size	Not defined
Ft9	1,2	Describe how the client behaves in case of: <ul style="list-style-type: none"> - GetFile response- - GetFileAttributes response- - SetFile response- 	It will retry at the period defined by the options "Comtrade Directory Check Interval" and "Comtrade Upload Interval".
		Describe how client behaves when transferring files inside folders	The system maps a configurable "base" computer folder to each server "root" folder, by creating automatically a "ServerName" folder on it.

PIXIT for Service Tracking Model

ID	Ed	Description	Value / Clarification
Tr1	2	Which tracking services are supported by the client: <ul style="list-style-type: none"> - BrCbTrk - UrCbTrk 	<p>N</p> <p>N</p>

ID	Ed	Description	Value / Clarification
		<ul style="list-style-type: none"> - LocbTrk - GocbTrk - MsvcbTrk - UsvcbTrk - SgcbTrk - SpcTrk - DpcTrk - IncTrk - EncTrk - ApcFTrk - ApcIntTrk - BscTrk - IscTrk - BacTrk - GenTrk 	N N N N N N N N N N N N N N N N
Tr2	2	Describe how to view the tracking objects or their attributes	

Document History

Date	Comment	Author
15, April 2019	Changes for Ed2 (Driver version 3.0.1)	M. Salvador
08, March 2013	Initial Version for Ed1 (Driver version 2.0)	M. Salvador