

Test Procedures Change List (TPCL) for
IEC 61850 Client Test Procedures revision 1.1

UCA International Users Group
Testing Sub Committee

Date: April 3, 2012
Version 1.2

Introduction

Problems that are uncovered during conformance testing that impact the IEC 61850 Standard are taken back through the TISSUES Process. However, there are some problems that relate only to the content of the Test Procedures. The UCAiug is the owner of the Test Procedures and so has the responsibility for tracking changes. Given the long time lag between major versions, we have a need to track interim changes that may impact testing. This "Test Procedures Change List (TPCL)" document specifies such interim changes. The UCAiug test sub committee reviews and approves each change. Changes resulting in new test procedures shall be specified in the next revision of the test procedures.

This list:

- Contains changes to the most recent Client conformance test procedures
- Indicate if a change is:
 - Accepted, resulting in a clarified test procedure (included after the change list table)
 - Denied
 - Added to the next revision
- Shall be used by recognized/accredited test labs
- Is available at the UCAiug sharepoint for test sub committee members

References

Conformance Test Procedures for Client System with IEC 61850-8-1 interface,
Revision 1.1, October 31, 2009

Change List

ID	TEST CASE	CHANGE	FINAL PROPOSAL	RESULT Comment from editor(s)
1	cRp2 cBr2	Some client systems expect that report control block settings: RptID and DatSet are pre-configured in SCL. As such these clients don't write the RptID and Datset using online services as required in the test procedures. Note: RptID doesn't need to be configured in SCL because it has a default value	Move cRp2/cBr2 to conditional in table A4.2. The condition is "SetRCBValue(RptID or Datset)"	Accepted at telco 17 May 2011
2	cSg4	There is a typo in expected result step 1. "SUT requests <i>SelectActiveSG</i> " should be changed to "SUT requests <i>SelectEditSG</i> "	Fix typo	Accept
3	-	Include TPCL version on certificate	Add "with TPCL version 1.x", Compare template	Accepted at telco 17 May 2011

ID	TEST CASE	CHANGE	FINAL PROPOSAL	RESULT Comment from editor(s)
4	cSrv5	Not all clients do support GetDataValues	Move cSrv5 from mandatory to conditional with condition: GetDataValues	Accepted at telco 11 January 2012
5	cDs1	Not all clients do support GetLogicalNodeDirectory(DATASET)	Move cDs1, cDsN1a from mandatory to conditional with condition: GetLogicalNodeDirectory(DATASET)	Accepted at telco 11 January 2012
6	cDs2	Part 7-2 indicates GetDataSetDirectory is optional	Move cDs2, cDs5 and cDsN1b to conditional with condition: GetDataSetDirectory	Accepted at telco 4 April 2012
7	cSrvN3	Not all clients do support GetDataValues not only cSrv5 but also cSrvN3 need to be moved	Move cSrvN3 from mandatory to conditional with condition: GetDataValues	Accepted at telco 4 April 2012
8	-	Harmonize the client certificate with the server certificate template	See template	Accepted at telco 4 April 2012

Clarified Test Procedures (in order of the conformance blocks)

Association

Server

Data set

Setting Group

cSg4	Edit setting group values	<input type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> Inconclusive
IEC 61850-7-2 clause 13.3 IEC 61850-8-1 clause 16.2 PIXIT		
<u>Expected result</u> 1. SUT requests SelectEditSG 2. SUT requests GetSGValues[FC=SE] 3. SUT requests SetSGValues[FC=SE] 4. SUT requests ConfirmEditSG		
<u>Test description</u> 1. Request SelectEditSG to select first setting group of a server 2. Request GetSGValues[FC=SE] to get the current setting group values 3. Request SetSGValues[FC=SE] to set the new setting group values 4. Request ConfirmEditSG		
<u>Comment</u>		

Unbuffered Reporting

Buffered reporting

Control

File transfer

IEC 61850 Certificate Level A/B¹

<UCAIUG logo>

No. -xxxx

Issued to:

<<MANUFACTURER>>

<<FULL ADDRESS>>

For the client system:

<<CLIENT NAME>>

<<VERSION NUMBER>>

<<ADDITIONAL INFO>>

Issued by: <TESTLAB>

The client system has not shown to be non-conforming to:

IEC 61850-6, 7-1, 7-2, 7-3, 7-4 and 8-1

Communication networks and systems in substations

The conformance test has been performed according to IEC 61850-10 and [UCA IUG Conformance Test Procedures for Client System with IEC 61850-8-1 interface, revision 1.1 with TPCL version 1.2](#) with client system's protocol, model and technical issue implementation conformance statements: "<<PICS>>", "<<MICS>>", "<<TICS>>" and product's extra information for testing: "<<PIXIT>>".

The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1 Basic Exchange (./22)	12a Direct Control (./7)
2 Data Sets (./9)	12b SBO Control (./9)
2+ Data Set Definition (./4)	12c Enhanced Direct Control (./7)
3 Substitution (./3)	12d Enhanced SBO Control (./9)
4 Setting Group Selection (./4)	13 Time Synchronization (./4)
4+ Setting Group Definition (./2)	14 File Transfer (./8)
5 Unbuffered Reporting (./18)	
6 Buffered Reporting (./22)	

This certificate includes a summary of the test results as carried out at <testlab> in the <country> with <IED SIMULATOR> and <ANALYZER>. This document has been issued for information purposes only, and the original paper copy of the test report: No. xxxx will prevail.

<<LOCATION, DATE>>

<<manager NAME>>

<<JOB TITLE>>

<<NAME>>

<<JOB TITLE>>

1 Level A - Independent Test lab with certified ISO 9000 or ISO 17025 Quality System
 Level B – Recognized Test lab with ISO 9000 or ISO 17025 equivalent Quality System
 2 TPCL – test procedure change list

Applicable Test Procedures from the UCA IUG Conformance Test Procedures for Client System with IEC 61850-8-1 interface, [revision 1.1 with TPCL version 1.2](#)

Conformance Block	Mandatory	Conditional
1: Basic Exchange	cAss1, cAss2, cAss3, cAss4, cAssN1, cAssN4, cAssN5, cAssN6	cAssN7 cSrv1, cSrv2, cSrv3, cSrv4, cSrv5, cSrv6, cSrv7, cSrvN1, cSrvN2, cSrvN3, cSrvN4, cSrvN5, cSrvN6
2: Data Sets		cDs1, cDs2, cDs3, cDs4, cDs5, cDsN1a, cDsN1b, cDsN2, cDsN3
2+: Data Set Definition	cDs6, cDsN4	cDs7, cDsN5
3: Substitution	cSub1	cSub2, cSub3
4: Setting Group Selection	cSg2, cSgN1	cSg1, cSg3
4+: Setting Group Definition	cSg3, cSg4	
5: Unbuffered Reporting	cRp3, cRp4, cRp5, cRp8, cRp9, cRp10, cRpN2, cRpN3, cRpN7, cRpN8	cRp1, cRp2, cRp6, cRp7, cRpN1, cRpN4, cRpN5, cRpN6
6: Buffered Reporting	cBr3, cBr4, cBr5, cBr8, cBr9, cBr10, cBr11, cBr12, cBrN2, cBrN3, cBrN7, cBrN8, cBrN9	cBr1, cBr2, cBrN1 cBr6, cBr7, cBr13, cBrN4, cBrN5, cBrN6
12a: Direct control	cCtl4, cCtlN1 cDOs1, cDOs2	cCtl1, cCtl2, cCtl3
12b: SBO control	cCtl4, cCtlN1 cSBOs1, cSBOs2, cSBOs3	cCtl1, cCtl2, cCtl3, cSBOs4
12c: Enhanced Direct Control	cCtl4, cCtlN1 cDOes1, cDOes2	cCtl1, cCtl2, cCtl3
12d: Enhanced SBO control	cCtl4, cCtlN1, cSBOes1, cSBOes2, cSBOes3	cCtl1, cCtl2, cCtl3 cSBOes4
13: Time sync	cTm1	cTm2, cTmN1, cTmN2
14: File transfer	cFt1, cFt2, cFt3, cFtN1, cFtN2	cFt4, cFt5, cFtN3

Updated table in the client test procedures

Table A.4.1: ACSI services per conformance block for IEC 61850-8-1 Client systems

Conformance Block	Mandatory	Conditional
1: Basic Exchange	Associate Abort and/or Release	GetAllDataValues SetDataValues GetServerDirectory GetLogicalDeviceDirectory GetLogicalNodeDirectory (DATA) GetDataDirectory GetDataDefinition GetDataValues
2: Data Set		GetDataSetValues DataSetValues GetLogicalNodeDirectory (DATA-SET) GetDataSetDirectory
2+: Data Set Definition	CreateDataSet DeleteDataSet	
3: Substitution	SetDataValues	GetLogicalNodeDirectory (SGCB)
4: Setting Group Selection	SelectActiveSG GetSGCBValues	
4+: Setting Group Definition	SelectEditSG, GetSGValues SetSGValues ConfirmEditSGValues	
5: Unbuffered Reporting	Receive Report GetURCBValues SetURCBValues	GetLogicalNodeDirectory (URCB)
6: Buffered Reporting	Receive Report GetBRCBValues SetBRCBValues	GetLogicalNodeDirectory (BRCB)
7: Logging	GetLCBValues GetLogicalNodeDirectory (LOG) QueryLogByTime or QueryLogAfter GetLogStatusValues	GetLogicalNodeDirectory (LCB) SetLCBValues
12a: Direct control	Operate	TimeActivatedOperate
12b: SBO control	Select, Operate	Cancel, TimeActivatedOperate
12c: Enhanced Direct Control	Operate Receive CommandTermination	TimeActivatedOperate
12d: Enhanced SBO control	SelectWithValue, Operate Receive CommandTermination	Cancel, TimeActivatedOperate
13: Time sync	TimeSynchronization	
14: File transfer	GetServerDirectory(FILE) GetFileAttributeValues GetFile	SetFile DeleteFile

Table A.4.2: Test procedures per conformance block

Conformance Block	Mandatory	Conditional
1: Basic Exchange	cAss1, cAss2, cAss3, cAss4, cAssN1, cAssN4, cAssN5, cAssN6	Automatic startup: cAssN7 GetXxxDirectory ¹ : cSrv1, cSrv2, cSrv3, cSrv4, cSrvN1 GetDataValues: cSrv5, cSrvN3 SetDataValues: cSrv6, cSrvN4 GetAllDataValues: cSrv7, cSrvN2 Quality: cSrvN5 TimeQuality: cSrvN6
2: Data Sets		GetDataSetValues: cDs3, cDsN2 SetDataSetValues: cDs4, cDsN3 GetLogicalNodeDirectory(DATA-SET): cDs1, cDsN1a GetDataSetDirectory: cDs2, cDs5, cDsN1b
2+: Data Set Definition	cDs6, cDsN4	DeleteDataSet: cDs7, cDsN5
3: Substitution	cSub1	Substituted: cSub2, cSub3
4: Setting Group Selection	cSg2, cSgN1	GetLogicalNodeDirectory(SGCB): cSg1 GetSettingGroupValues: Sg3
4+: Setting Group Definition	cSg3, cSg4	
5: Unbuffered Reporting	cRp3, cRp4, cRp5, cRp8, cRp9, cRp10, cRpN2, cRpN3, cRpN7, cRpN8	GetLogicalNodeDirectory(URCB): cRp1, cRpN1 SetURCBValue(RptID or Datset): cRp2 Buffer time: cRp6 General interrogation: cRp7 Reserved: cRpN4 Unsupported optflds: cRpN5 Unsupported trigger: cRpN6
6: Buffered Reporting	cBr3, cBr4, cBr5, cBr8, cBr9, cBr10, cBr11, cBr12, cBrN2, cBrN3, cBrN7, cBrN8, cBrN9	GetLogicalNodeDirectory(BRCB): cBr1, cBrN1 SetBRCBValue(RptID or Datset): cBr2 Buffer time: cBr6 General interrogation: cBr7 Purge buffer: cBr13 Reserved: cBrN4 Unsupported optflds: cBrN5 Unsupported trigger: cBrN6
12a: Direct control	cCtl4, cCtlN1, cDOs1, cDOs2	Test: cCtl1 Check: cCtl2 Change control model: cCtl3
12b: SBO control	cCtl4, cCtlN1, cSBOs1, cSBOs2, cSBOs3	Test: cCtl1 Check: cCtl2 Change control model: cCtl3 Cancel: cSBOs4
12c: Enhanced Direct Control	cCtl4, cCtlN1, cDOes1, cDOes2	Test: cCtl1 Check: cCtl2 Change control model: cCtl3
12d: Enhanced SBO control	cCtl4, cCtlN1, cSBOes1, cSBOes2, cSBOes3	Test: cCtl1 Check: cCtl2 Change control model: cCtl3 Cancel: cSBOes4
13: Time sync	cTm1	Optional: cTm2 TimeQuality: cTmN2 ClockNotsynchronized: cTmN1
14: File transfer	cFt1, cFt2, cFt3, cFtN1, cFtN2	SetFile: cFt4, cFtN3 DeleteFile: cFt5

¹ GetXxxDirectory = GetServerDirectory, GetLogicalDeviceDirectory, GetLogicalNodeDirectory(DATA), GetDataDirectory and GetDataDefinition