



TRDP

Train Real Time Data Protocol

Release Notes for TRDP 1.3.2.0

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Restrictions and Obligations

TRDP software and documentation is subject of different license agreements. Please see chapter 2.2 for detailed information.

The information in this document and the product described by this document is subject to change without prior notice. We reserve all rights in this document and in the information contained therein.

Please note, that the code is not yet used in a real project and has been tested only in the lab and only for the test cases documented in [TestRep].

Participants

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1. Introduction

1.1. Purpose

This document is the Release Notes for the Bombardier* Release of TCNOpen* TRDP* Version as implementation of the communication profile defined in [Wire].

1.2. Intended Audience

The audience of this document and the users of the release are software engineers that want to adapt or to use TCNOpen* TRDP* as implementation of the communication profile defined in [Wire].

1.3. References/Related Documents

Reference	Number	Title
[Wire]	IEC61375-2-3 FDIS	Communication Profile
[TestRep]	TCN-TRDP2-D-BOM-032	TRDP Conformance Test Report
[UserMan]	TCN-TRDP2-D-BOM-011	TRDP User's Manual
[RefMan]	TCN-TRDP2-D-BOM-033	TRDP Reference Manual

Table 1: References

1.4. Abbreviations and Definitions

Abbreviation	Definition
PD	"Process Data" Part of the in [Wire] defined communication protocol Used for cyclic data transmissions based on UDP protocol.
UDP-MD	"UDP Message Data" Part of the in [Wire] defined communication protocol Used for event driven data transmissions based on UDP protocol.
TCP-MD	"UDP Message Data" Part of the in [Wire] defined communication protocol Used for event driven data transmissions based on TCP protocol.
ETBN	Ethernet Train Backbone Node

Table 2: Abbreviations and Definitions

2. Product Definition

2.1. General Description

The TCNOpen TRDP is an open source implementation of communication profile described in [Wire] and includes compiled libraries for primary targets and source code to be used for other platforms as well as examples for reference implementation.

TCNOpen TRDP includes:

- TRDPLight (the communication protocol stack for PD, UDP-MD and TCP-MD)
- TRDP Marshall – a service for marshalling/unmarshalling TRDP user data
- TRDP XML – a service for reading TCNOpen TRDP XML configuration files
- TRDP CTRL – a service to control the ETBN functionality
- TRDP DNR – a service for IP-URI address translation
- TRDP TTI – a service to access the train topology information data base of the ETBN
- TRDP SPY – a wireshark plugin to interpret TRDP telegrams

It does not yet include:

- TRDP LADDER – ladder support acc. to IEC61375-3-4
- TRDP SDT – a service for safe data transmission according to the definition in [Wire]

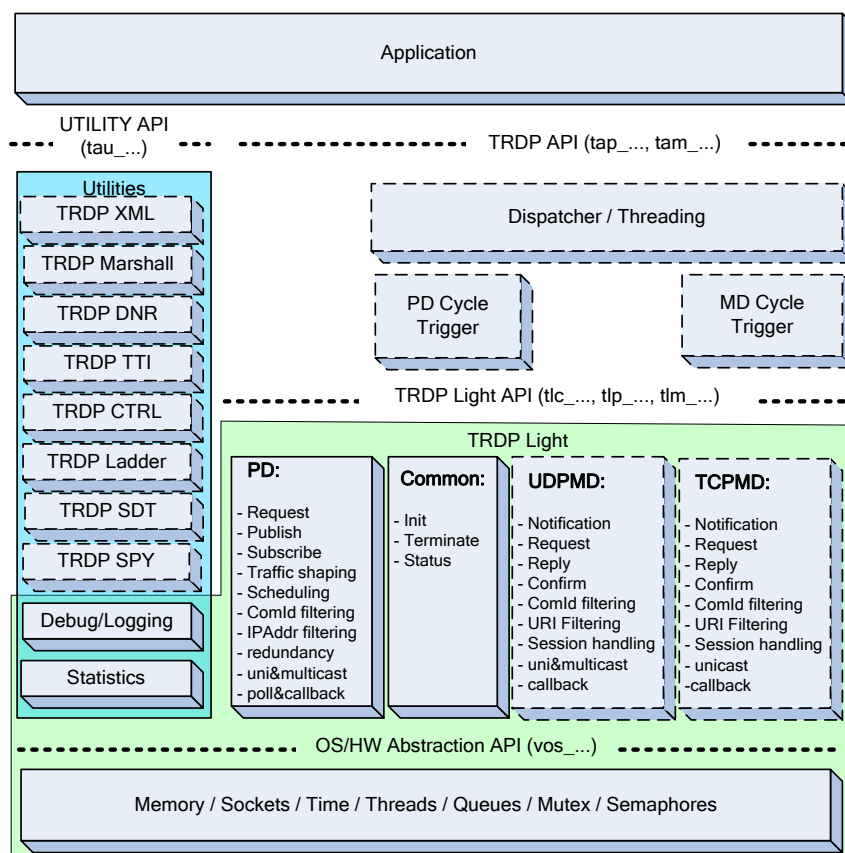


Figure 1 TRDP Modular Structure

2.2. License Agreements

The TRDP Source Code (except the TRDPSPy source code) is subject to the terms of the Mozilla Public License, v. 2.0.

If a copy of the MPL was not distributed with this document, You can obtain one at <http://mozilla.org/MPL/2.0/>.

The TRDPSPy Source Code Form is subject to the terms of the GPL.

2.3. Product Identification

TCNOpen TRDP contains the following parts:

Abbreviation	Identification	Remark
TRDPLight		
TRDPMarshall		
TRDPXML		
TRDPSPy		only Win64 and Linux
TRDPCTRL		Not tested
TRDPLadder		
TRDPDNR		
TRDPTTI		
TRDPSTF		Only under special license agreement with Bombardier

Table 3: Product Identifications

2.4. Targets

2.4.1. Primary Targets

TCNOpen TRDP is provided for a set of primary targets. Outputs for these have been verified during the release process.

Target	Use	OS	CPU-HW
Linux PC	General	Linux 32bit	x86 comp, Power PC
Windows PC	General	Windows XP	x86 comp.
Apple MAC	General	MacOS	x86 comp.
Embedded Controller	General	VxWorks	PowerPC

Table 4: Primary Targets

2.4.2. Secondary Targets

TCNOpen TRDP is also delivered as an SDK with source code and example makefiles only. The makefiles serve as examples for building the binaries for different platforms and can be used as a template for specific platform builds. The following table shows the builds which have not been tested but have been taken care of within the source code.

Target	Use	OS	CPU-HW
Windows PC	General	Windows7 32/64	x86

Table 5: Secondary Targets

3. Delivery

3.1. Platform

Target	File	Description
Windows PC, VxWorks, Linux (Posix), MAC (Posix), QNX (Posix), Integrity (Posix)		This version does not include ready compiled libraries and DLL but source code and build environments.

Table 6: Platform Delivery Content TRDPLight

Target	File	Description
Windows PC, VxWorks, Linux (Posix), MAC (Posix), QNX (Posix), Integrity (Posix),		This version does not include ready compiled libraries and DLL but source code and build environments.

Table 7: Platform Delivery Content TRDPMarshall

Target	File	Description
Linux PC, Windows PC,		This version does not include ready compiled libraries and DLL but source code and build environments.

Table 8: Platform Delivery Content TRDPXML

Target	File	Description
Linux PC, Windows PC,		This version does not include ready compiled libraries and DLL but source code and build environments.

Table 9: Platform Delivery Content TRDPCTRL

Target	File	Description
Linux32	..\spy\linux32\packet-trdp_spy.so	Linux32 Wireshark plugin
Win64	..\spy\win64\trdp_spy.dll	Win64 Wireshark plugin
Win64	..\spy\win64\readme.txt	Readme for Win64 Wireshark plugin

Table 10: Platform Delivery Content TRDPSPy

3.2. SDK

To also support other targets than the platform does, TCNOpen TRDP is delivered as an SDK (Software Development Kit). The release is available under SourceForge (<https://svn.code.sf.net/p/tcnopen/trdp/tags/trdp/1.2.0.0>). The release comprises items according to the tables below using the following file structure:

DirLevel1	DirLevel2	DirLevel3	Description
config			XML configuration structure and build environment configurations
doc			Documentation
resources			Open source resources used within TRDP
	posix		
	windows		
		getopt	getopt functionality for test programs
		iconv	XML Parser functionality
		libxml	XML parser functionality
		pthread	Posix threads for vos functionality
		wireshark	Wireshark win64
src			TRDP source code
	api		TRDP API header files
	common		TRDP source code files
	example		TRDP example application files
	vos		VOS source code and header files
		api	VOS API header files
		common	VOS target independing source code files
		posix	VOS POSIX depending source code files
		vxworks	VOS VXWORKS depending source code files
		windows	VOS WIN32 depending source code files
spy			Wireshark plugin for TRDP
	doc		Documentation
	src		Source code for wireshark plugin
	linux32		Plugin for Linux32
	Win64		Plugin for Win64
test			
	diverse		Test diverse functions of the library
	laddermdtest		Test of the TRDP ladder MD functionality
	ladderpdtest		Test of the TRDP ladder MD functionality
	lint		PCLint profile for Windows
	marshalling		Test of marshalling/un-marshalling
	mdpatterns		Test of the TRDP MD patterns
	pdpatterns		Test of the TRDP PD patterns
	udpmdcom		Test of the UDP MD communication

DirLevel1	DirLevel2	DirLevel3	Description
	xml		Test of the TRDP XML configuration
example			Examples for TRDP use
VisualC			VisualC 2010 configuration for TRDP library and related test examples
XCode			Xcode configuration for TRDP library and related test examples

Table 11: SDK Delivery Directory Structure

3.2.1. TRDPLight

The TRDPLight contains the base functionality for PD, UDP-MD and TCP-MD.

File	Description
..\src\api\iec61375-2-3.h	TRDP protocol definitions
..\src\api\trdp_types.h	TRDP type definitions
..\src\api\trdp_if_light.h	TRDP light API definitions
..\src\common\trdp_if.c	TRDP light API
..\src\common\trdp_if.h	TRDP light API internal definitions
..\src\common\trdp_dllmain.c	TRDP light Windows DLL stub
..\src\common\trdp_mdcom.c	TRDP light MD functionality
..\src\common\trdp_mdcom.h	TRDP light MD functionality definitions
..\src\common\trdp_pdcom.c	TRDP light PD functionality
..\src\common\trdp_pdcom.h	TRDP light PD functionality definitions
..\src\common\trdp_private.h	TRDP light private definitions
..\src\common\trdp_stats.c	TRDP light statistics functionality
..\src\common\trdp_stats.h	TRDP light statistics functionality definitions
..\src\common\trdp_utils.c	TRDP light utilities
..\src\common\trdp_utils.h	TRDP light MD utilities definitions
..\src\vos\api\vos_mem.h	VOS memory management functionality definitions
..\src\vos\api\vos_shared_mem.h	VOS shared memory management functionality definitions
..\src\vos\api\vos_sock.h	VOS IP network and socket management functionality definitions
..\src\vos\api\vos_thread.h	VOS thread and timer management functionality definitions
..\src\vos\api\vos_types.h	VOS type definitions
..\src\vos\api\vos_utils.h	VOS utility definitions
..\src\vos\common\vos_mem.c	VOS memory management functionality
..\src\vos\common\utils.c	VOS utilities
..\src\vos\posix\vos_private.h	VOS private definitions
..\src\vos\posix\vos_shared_mem.c	VOS shared memory management functionality

File	Description
..\src\vos\posix\vos_sock.c	VOS IP network and socket management functionality
..\src\vos\posix\vos_thread.c	VOS thread and timer management functionality
..\src\vos\windows\private.h	VOS private definitions
..\src\vos\windows\vos_shared_mem.c	VOS shared memory management functionality
..\src\vos\windows\vos_sock.c	VOS IP network and socket management functionality
..\src\vos\windows\vos_thread.c	VOS thread and timer management functionality
..\src\vos\vxworks\private.h	VOS private definitions
..\src\vos\vxworks\vos_shared_mem.c	VOS shared memory management functionality
..\src\vos\vxworks\vos_sock.c	VOS IP network and socket management functionality
..\src\vos\vxworks\vos_thread.c	VOS thread and timer management functionality

Table 12: SDK Delivery Content - TRDPLight

3.2.2. TRDPMarshall

The TRDPMarshall contains the marshalling/un-marshalling functionality.

File	Description
..\src\common\tau_marshall.c	Marshalling/un-marshalling functionality
..\src\api\tau_marshall.h	Marshalling/un-marshalling definitions

Table 13: SDK Delivery Content - TRDPMarshall

3.2.3. TRDPXML

The TRDPXML contains the functionality for reading TRDP XML configuration files.

File	Description
..\src\common\tau_xml.c	Read TRDP XML configuration functionality
..\src\api\tau_xml.h	Read TRDP XML configuration definitions
..\src\api\trdp-config.xsd	TRDP configuration XML schema

Table 14: SDK Delivery Content – TRDPXML

3.2.4. TRDPCTRL

The TRDPCTRL contains the functionality for controlling the ETB.

File	Description
..\src\common\tau_ctrl.c	ETB control functionality
..\src\api\tau_ctrl.h	ETB control definitions
..\src\api\tau_ctrl_types.h	ETB control types

Table 15: SDK Delivery Content – TRDPCTRL

3.2.5. TRDPDNR

The TRDPDNR contains the functionality for URI/IP address translation

File	Description
..\src\common\tau_dnr.c	Address translation functionality using DNR
..\src\api\tau_dnr.h	Address translation definitions

Table 16: SDK Delivery Content – TRDPDNR

3.2.6. TRDPTTI

The TRDPTTI contains the functionality for train topology information access

File	Description
..\src\common\tau_tti.c	Train topology information access functionality
..\src\common\tau_cstinfo.c	Train topology information access functionality
..\src\api\tau_tti.h	Train topology information access definitions

Table 17: SDK Delivery Content – TRDPTTI

3.2.7. TRDPSPy

The TRDPSPy contains the wireshark plugin for interpreting TRDP telegrams.

NOTE: The source code needs the resources iconv and libxml.

File	Description
..\spy\linux32\trdp_spy.so	Linux32 Wireshark plugin
..\spy\linux32\readme.txt	Readme for Linux32 Wireshark plugin
..\spy\win64\trdp_spy.dll	Win64 Wireshark plugin
..\spy\win64\readme.txt	Readme for Win64 Wireshark plugin
..\spy\src\CMakeListsCustom.txt	Installation guide for Wireshark plugin SDK
..\spy\src\README.txt	Build instruction
..\spy\src\trdp_spy\CMakeLists.txt	
..\spy\src\trdp_spy\lookuptype.c	
..\spy\src\trdp_spy\lookuptype.h	
..\spy\src\trdp_spy\makefile.am	
..\spy\src\trdp_spy\modulinfo.h.h	
..\spy\src\trdp_spy\packet-trdp_spy.cpp	
..\spy\src\trdp_spy\packet-trdp_spy.h	
..\spy\src\trdp_spy\parsebody.c	
..\spy\src\trdp_spy\parsebody.h	
..\spy\src\trdp_spy\plugin.c	
..\spy\src\trdp_spy\plugin.rc.in	
..\spy\src\trdp_spy\Readme.txt	

File	Description
..\spy\src\trdp_spy\TCN-TRDP2-TRDP SPY ReferenceManual.pdf	
..\spy\src\trdp_spy\trdp_env.c	
..\spy\src\trdp_spy\trdp_env.cpp	
..\spy\src\trdp_spy\trdp_env.h	
..\spy\src\scripts\runIDE.bat	
..\spy\src\scripts\setupEnv.bat	

Table 18: SDK Delivery Content - TRDP Spy

3.2.8. Resources

The following open source resources are needed for the below described functionality of the TRDP library are included in the delivery.

File	Description
..\resources\windows\getopt*	Windows getopt implementation for testing
..\resources\windows\iconv*	Iconv for XML configuration interpretation
..\resources\windows\libxml*	Libxml for XML configuration interpretation
..\resources\windows\pthread*	Posix thread implementation for Windows for VOS
..\resources\windows\wireshark*	Wireshark 1.8.3 for TRDP Spy

Table 19: SDK Delivery Content – Resources

3.2.9. Build Environment

The following files for the build environment are included in the delivery.

File	Description
..\makefile	Makefile for TRDP Light
..\readme-makefile.txt	Makefile configuration instruction
..\config\buildset- tings_posix_TEMPLATE	Makefile configuration settings
..\VisualC*	VisualC 2010 configuration files to build the TRDP library as well as the different test applications.
..\Xcode*	XCode configuration files to build the TRDP library as well as the different test applications.

Table 20: SDK Delivery Content – Build Environment

3.2.10. Tests

The following test programs are included in the delivery.

File	Description
..\test\diverse*	Diverse tests for TRDP library
..\test\lint*	PCLint 8.0.w configuration for Windows and Linux
..\test\marshalling*	Marshalling test
..\test\mdpatters*	MD pattern tests
..\test\pdpatters*	PD pattern tests
..\test\udpmdcom*	UDP MD communication test
..\test\xml*	XML configuration test
..\test\laddermdtest*	Ladder MD test
..\test\ladderpdtest*	Ladder PD test

Table 21: SDK Delivery Content - Tests

3.2.11. Examples

The following example programs are included in the delivery.

File	Description
..\example\example.xml	TRDP example configuration
..\example\echoPolling.c	PD polling example
..\example\echoSelect.c	PD select example
..\example\echoSelectCmdLine.c	PD select example
..\example\receiveHello.c	PD receive example
..\example\sendHello.c	PD send example

Table 22: SDK Delivery Content - Examples

3.3. Documentation

The following documents are related to the delivered product but not part of the delivery.

#	Document	Revision	Identification
1	TRDP Coding Rules	07	TCN-TRDP1-A-BOM-008
2	TRDP System Requirement Specification	10	TCN-TRDP1-D-BOM-003
3	TRDP Architecture & Design Specification	06	TCN-TRDP2-D-BOM-019
4	TRDP Conformance Test Specification		TCN-TRDP2-D-BOM-031
5	TRDP Conformance Test Report		TCN-TRDP2-D-BOM-032
6	TRDP User's Manual	28	TCN-TRDP2-D-BOM-011
7	TRDP Reference Manual	06	TCN-TRDP2-D-BOM-033

Table 23: SDK Delivery Content - Documentation

3.4. Restrictions

None

4. Installation

4.1. Platform

This version does not contain ready made libraries or DLL (except for TRDP SPY) but only the SDK including the build environment configurations.

4.2. SDK

1. Unpack the file “TCNOpenTRDP 1.2.0.0.zip” into your development work area.
2. Check the files in src/vos for targets which fits your target
3. Edit the Makefile by adding or changing your configuration.
4. For windows environments, open the VisualC/Win32TRDP_VS2010.sln file with MS Visual Studio 2010.

.
All source files/libraries/executables can be found in the folders described in chapter 3.2.

5. How to use

5.1. Posix (Linux, MAC, QNX, Integrity)

Adapt the delivered configuration for the makefile and compile the TRDP library.

5.2. VxWorks

Adapt the delivered configuration for the makefile and compile the TRDP library.

5.3. Windows

Adapt and use the delivered VisualC 2010 configuration and compile the TRDP library.

6. Changes

The following changes have been implemented since the previous release. The column ‘*Ticket #.*’ Contains the ticket number at <https://sourceforge.net/p/tcnopen/tickets/>. Ticket numbers marked with “XLS” referring to the now closed list “trdp/BugTracking.xls”.

6.1. TRDPLight

6.1.1. Corrected Errors

TICKET #	Description
#117	PD Status packet is not sent on request
#118	<u>Defines in iec61375-2-3.h do not match IEC IS</u>
#119	<u>tlc_getInterval() repeatedly returns 0 after timeout</u>
#120	<u>ComID messed up in 61375-2-3: Which one to use?</u>
#121	<u>Timeout-ed PD receiver should trigger callback after receiving packet again</u>
#122	<u>64Bit Problem: Definition of VOS_TIME_T is not compatible</u>
#123	<u>TopoCount check does not follow standard (Table A.3)</u>
#124	<u>tau_dnr: Cache keeps etbTopoCount only</u>
#126	<u>Opened UDP socket is not released if join or bind failed in trdp_requestSocket()</u>
#127	<u>MD notify message: Invalid session identifier</u>
#128	<u>PD: Support of ComId == 0</u>
#129	<u>Found a bug which yields wrong output params and potentially seg-faults</u>
#130	<u>PD Pull: Request is always sent to the same ip address</u>
#132	<u>tlp_publish: Check of datasize wrong if using marshaller</u>
#133	<u>Accelerate PD packet reception</u>
#134	<u>Example trdp-xmlpd-test crash due to zero elemSize.</u>
#136	<u>PD topography counter with faulty behavior</u>
#137	<u>tlc_closeSession should close the tcp socket used for md communication</u>
#138	<u>Erroneous closing of receive md socket</u>
#139	<u>Swap parameter in tlm_reply</u>
#140	<u>tlp_get reports immediately TRDP_TIMEOUT_ERR for a subscription with TRDP_TIMER_FOREVER</u>
#141	<u>PD: Pull request with replyComId==0 and ComId!=0 fails</u>
#142	<u>Compiler warnings / MISRA-C 2012 issues</u>

TICKET #	Description
#143	<u>What is tlm_replyErr() for?</u>
#144	<u>32bit mode enforcement not complete</u>
#145	<u>Optional callback for each received valid PD</u>
#146	<u>On Timeout, PD Callback is always called with no data/datasize == 0</u>
#147	<u>No timeout with TCP if destination is not reachable</u>
#148	<u>Wrong element used in trdp_mdCheckTimeouts() to invoke the callback</u>
#149	<u>SourceUri and DestinationUri don't with 32 characters</u>
#150	<u>Destination IP address is not copied to md_info on TCP-Layer</u>
#151	<u>tlp_request: timeout-flag is not cleared</u>
#152	<u>tlp_publish: Error if srcIpAddr is a multicast-address</u>
#153	<u>Two replies on one pull-request at multicast address</u>
#154	<u>ComIds and DSIds literals (#define TRDP ...) in trdp_proto.h too long</u>
#155	<u>Kill trdp_proto.h - move definitions to iec61375-2-3.h</u>
#156	<u>Recursion counter never decremented</u>
#158	<u>MdReplyTimeout: Standard defines 0 as infinite time and not -1</u>
#159	<u>Is there any plan to include the SDTv2 implementation?</u>
#160	<u>TRDP MD Test 4 (TCP request/reply) fails with reply timeout</u>

Table 24: Corrected Errors TRDPLight

6.1.2. New or Enhanced Functions

Ticket #	Description

Table 25: New or enhanced functions TRDPLight

6.1.3. Known Errors

Ticket #	Description
#1	<u>PD/MD: For performance reasons a unjoin shall be done after unsubscribing (XLS #30)</u>
#3	<u>TRDPSTATS: Incorrect counter for received packets on dual interface (XLS #131)</u>
#5 (XLS #37)	<u>MD: For sent unicast MD TRDP assumes that only one reply may be received.</u>
#21	<u>Time dependent functions may fail in 2038 (wrap around of timeval)</u>
#87	<u>Example application for backbone-aware network is missing</u>
#101	<u>Optional callback function on PD send</u>
#161	<u>Increase performance</u>

Ticket #	Description
#162	Independent handling of PD and MD to reduce jitter

Table 26: Known Errors TRDPLight

6.1.4. Compatibility to Earlier Releases

Incompatible to earlier releases due to #46, #47, #53.

6.2. TRDPMarshall

6.2.1. Corrected Errors

Ticket #	Description
None	

Table 27: Corrected Errors TRDPMarshall

6.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 28: New or enhanced functions TRDPMarshall

6.2.3. Known Errors

Ticket #	Description
None	

Table 29: Known Errors TRDPMarshall

6.2.4. Compatibility to Earlier Releases

Compatible to previous release.

6.3. TRDPXML

6.3.1. Corrected Errors

Ticket #	Description
None	

Table 30: Corrected Errors TRDPXML

6.3.2. New or Enhanced Functions

Ticket #	Description
None	

Table 31: New or enhanced functions TRDPXML

6.3.3. Known Errors

Ticket #	Description
#2 (XLS #64)	TRDPXML: Support of mapped devices missing

Table 32: Known Errors TRDPXML

6.3.4. Compatibility to Earlier Releases

Compatible to previous release.

6.4. TRDPCTRL

6.4.1. Corrected Errors

Ticket #	Description
#131	TRDP_ECSP_CTRL T in the tau_ctrl_types.h should not include the <u>leadVehOfCst</u> field

Table 33: Corrected Errors TRDPCTRL

6.4.2. New or Enhanced Functions

Ticket #	Description
None	

Table 34: New or enhanced functions TRDPCTRL

6.4.3. Known Errors

Ticket #	Description
#13	Implemented but not yet tested with ETBN

Table 35: Known Errors TRDPCTRL

6.4.4. Compatibility to Earlier Releases

Compatible to previous release.

6.1. TRDPDNR

6.1.1. Corrected Errors

Ticket #	Description
None	

Table 36: Corrected Errors TRDPDNR

6.1.2. New or Enhanced Functions

Ticket #	Description
None	

Table 37: New or enhanced functions TRDPDNR

6.1.3. Known Errors

Ticket #	Description
#125	<u>tau_dnr: TCN DNS support missing</u>

Table 38: Known Errors TRDPDNR

6.1.4. Compatibility to Earlier Releases

Compatible to previous release.

6.1. TRDPTTI

6.1.1. Corrected Errors

Ticket #	Description
None	

Table 39: Corrected Errors TRDPTTI

6.1.2. New or Enhanced Functions

Ticket #	Description
None	

Table 40: New or enhanced functions TRDPTTI

6.1.3. Known Errors

Ticket #	Description
None	

Table 41: Known Errors TRDPTTI

6.1.4. Compatibility to Earlier Releases

Compatible to previous release.

6.2. TRDPSpy

6.2.1. Corrected Errors

Ticket #	Description
#157	<u>TRDP Spy needs update for newer Wireshark versions (> 1.8.3)</u>

Table 42: Corrected Errors TRDPSpy

6.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 43: New or enhanced functions TRDPSpy

6.2.3. Known Errors

Ticket #	Description
#157	<u>TRDP Spy needs update for newer Wireshark versions (> 1.8.3)</u> XML parsing still open for Wireshark 2.x

Table 44: Known Errors TRDPSpy

6.2.4. Compatibility to Earlier Releases

DLL only compatible to Wireshark 2.x. For Wireshark 1.8.3 the previous release needs to be used.

7. History Release 1.1.0.0

7.1. TRDPLight

7.1.1. Corrected Errors

TICKET #	Description
XLS #109	vos_getInterfaces for WIN32 does not read subnet masks
XLS #125	After TRDP rev. 891, if own IP address != 0; Subscriber becomes not able to register the socket descriptor which is created in tlp_subscribe() by the Subscriber. After that, Subscriber can not receive PD packet any more.
XLS #126	The TCP reception is not handling properly (WSA)ECONNRESET.
XLS #130	Although the maximum length of PDDATA is 1432 octets in the specification, a PD packet with 1436 octets of PDDATASET is allowed to be sent.
XLS #132	The statistic information gotten with tlc_getPubStatistics() is not for publisher but for subscriber.
XLS #133	Subscriber performs Join multicast. When numJoin is obtained in tlc_getStatistics(), the value is always 0.
XLS #134	While sending PD packet is performed repeatedly in Linux, when the clock time is turned back, sending PD packet is stopped. After that, when the clock time is set forward than the previous time not altered, sending PD packets is restarted.
XLS #135	Although Publisher sends PD packets, the value of numSend obtained in tlc_getPubStatistics() is always 0.

Table 45: Corrected Errors TRDPLight

7.1.2. New or Enhanced Functions

Ticket #	Description
XLS #25	vos_shared_mem.c - WIN32 implementation missing
XLS #29	vos_thread.c semaphore implementation missing
XLS #57	vos_thread.c mailbox implementation

Table 46: New or enhanced functions TRDPLight

7.1.3. Known Errors

Ticket #	Description
#1 (XLS #30)	MD/PD: For performance reasons a un-join shall be done after un-

Ticket #	Description
	subscribing.
#3 (XLS #131)	TRDPSTATS: Incorrect counter for received packets on dual interface
#5 (XLS #37)	MD: For sent unicast MD TRDP assumes that only one reply may be received.
#21	Time dependent functions may fail in 2038 (wrap around of timeval)
#87	<u>Example application for backbone-aware network is missing</u>
#101	<u>Optional callback function on PD send</u>

Table 47: Known Errors TRDPLight

7.1.4. Compatibility to Earlier Releases

Compatible to earlier releases.

7.2. TRDPMarshall

7.2.1. Corrected Errors

Ticket #	Description
XLS #137	The size of Dataset obtained with tau_calcDatasetSizeByComId() is wrong.
XLS #138	The size of Dataset unmarshlled with tau_unmarshall() does not return to the same size as before marshalling.
XLS #139	A part of Dataset is missing after marshalling with tau_marshall().

Table 48: Corrected Errors TRDPMarshall

7.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 49: New or enhanced functions TRDPMarshall

7.2.3. Known Errors

Ticket #	Description
None	

Table 50: Known Errors TRDPMarshall

7.2.4. Compatibility to Earlier Releases

Compatible to earlier releases.

7.3. TRDPXML

7.3.1. Corrected Errors

Ticket #	Description
None	

Table 51: Corrected Errors TRDPXML

7.3.2. New or Enhanced Functions

Ticket #	Description
None	

Table 52: New or enhanced functions TRDPXML

7.3.3. Known Errors

Ticket #	Description
#2 (XLS #64)	TRDPXML: Support of mapped devices missing

Table 53: Known Errors TRDPXML

7.3.4. Compatibility to Earlier Releases

Compatible to earlier releases.

7.4. TRDPCTRL

First release in 1.2.0.0.

7.5. TRDPSpy

7.5.1. Corrected Errors

Ticket #	Description
None	

Table 54: Corrected Errors TRDPSpy

7.5.2. New or Enhanced Functions

Ticket #	Description
None	

Table 55: New or enhanced functions TRDPSpy

7.5.3. Known Errors

Ticket #	Description
#4 (XLS #141)	TRDPSPY: Incorrect visualisation of data packets > 1MTU

Table 56: Known Errors TRDP Spy

8. History Release 1.2.1.0

The following changes have been implemented since the previous release. The column ‘Ticket #.’ Contains the ticket number at <https://sourceforge.net/p/tcnopen/tickets/>. Ticket numbers marked with “XLS” referring to the now closed list “trdp/BugTracking.xls”.

8.1. TRDPLight

8.1.1. Corrected Errors

TICKET #	Description
#10	TRDPPD: PD send cycle can shift by the time
#14	PD: In the case of PD Pull pattern Publisher with Traffic-shaping = ON and In setting tlp_publish() is failed
#15	VOS: In case of POSIX, vos_queueReceive() fails for a miss of taking semaphore.
#16	VOS: In case of POSIX, vos_queueReceive() does not release semaphore
#17	tlp_subscribe() returns wrong *pSubHandle
#19	tlc_reinitSession(): rejoin for UDP MD missing
#20	vos_memInit() does not handle provided memory pool
#22	ADR should be named Name Resolution
#23	tlc_getInterval() always returning 10ms
#24	trdp_if.c won't compile without MD_SUPPORT
#25	CRC32 calculation is not according IEEE802.3
#29	TRDP: user references shall be void pointer
#30	TRDP tlc_getListStatistics() implementation is missing
#31	TRDP: tlc_getRedStatistics() implementation missing
#32	IP addresses in TRDP PD INFO T differ depending on functions and are not useful
#35	VOS: currently unused function cyclic_thread does not consider time for actual thread function
#36	VOS: big/little endian auto detection does not work in any environment
#37	Packet defines in tau_ctrl_types.h do not match FDIS-draft
#38	Scheduling policy values do not match pthread/Posix value
#39	Check of protocol version
#40	Feature needed: Option to ignore sequence counter on PD subscriptions
#41	PD sequence counter is not bound to source address
#42	Usage of memcmp() in the trdp_pdReceive() function
#43	Usage of memset() in the trdp_pdReceive() function
#44	Reception of its own sending multicast packets

TICKET #	Description
#45	<u>“validity-behavior” tag spelling</u>
#46	<u>Protocol change: operational topocount needed</u>
#47	<u>Protocol change: no FCS for data part of telegrams</u>
#49	<u>Endianness Setting in Visual C Project incorrect</u>
#51	<u>VOS: change underlying function for vos_dottedIP</u>
#53	<u>Interface clean-up</u>
#54	<u>MS Windows Win32TRDP XMLPDTest not updated with latest API</u>
#55	<u>Allow specific callback within tlp_subscribe and tlm_addListener</u>
#56	<u>Sequence counter reset failure</u>
#57	<u>Padding bytes after user data</u>
#58	<u>Dataset expanding to multiples of 4</u>
#59	<u>MD: user status of reply and confirm not set in telegram</u>
#60	<u>Second sourceIP parameter in tlp_subscribe() is not used</u>
#61	<u>tlm_readListener() and tlp_resubscribe() implementation missing</u>
#62	<u>MD test (md-test) is failing and crashing</u>
#63	<u>Function am_big_endian not needed</u>
#64	<u>MDCOM module needs some restructuring and correction after static analysis</u>
#66	<u>Memory corruption when sending a reply with data size longer than data size of request message</u>
#67	<u>Memory leak when receiving long messages</u>
#68	<u>Telegram statistics for TCP not consistent</u>
#69	<u>Make framework broken for certain make targets</u>
#70	<u>TRDPLight: Automatic Transmission of 'Me' Message accd. A.7.7.2 2nd and 5th Paragraph is missing</u>
#71	<u>TRDPLight: timeout==0 shall mean infinit time is not yet implemented</u>
#72	<u>TRDPLight: Windows7 vos_getInterfaces() bug</u>
#73	<u>TRDPLight: Multicast "join" fails on Windows system with two ethernet interfaces</u>
#74	<u>TRDPLight: topo counts check doesn't take into account local communication</u>

Table 57: Corrected Errors TRDPLight

8.1.2. New or Enhanced Functions

Ticket #	Description
#6	<u>VOS: Add VxWorks support–</u>
#12	<u>VOS: Add INTEGRITY support for POSIX interface</u>
#48	<u>Implement message data unicast retry protocol</u>

Table 58: New or enhanced functions TRDPLight

8.1.3. Known Errors

Ticket #	Description
#1 (XLS #30)	MD/PD: For performance reasons a un-join shall be done after un-subscribing.
#3 (XLS #131)	TRDPSTATS: Incorrect counter for received packets on dual interface
#1	PD/MD: For performance reasons a unjoin shall be done after un-subscribing (XLS #30)
#3	TRDPSTATS: Incorrect counter for received packets on dual interface (XLS #131)
#5 (XLS #37)	MD: For sent unicast MD TRDP assumes that only one reply may be received.
#7	TRDP_TTI: Add topology information support
#8	TRDP DNR: Add URI-IP address translation support
#11	VOS: Complete VxWorks functionality regarding shared memory
#21	Time dependent functions may fail in 2038 (wrap around of timeval)
#87	Example application for backbone-aware network is missing
#101	Optional callback function on PD send

Table 59: Known Errors TRDPLight

8.1.4. Compatibility to Earlier Releases

Incompatible to earlier releases due to #46, #47, #53.

8.2. TRDPMarshall

8.2.1. Corrected Errors

Ticket #	Description
#27	Mashalling/unmarshalling does not work for 32 bit or higher data types on a 16 bit platform
#28	Marshalling: I request to remove the static declaration for find_DS()

Table 60: Corrected Errors TRDPMarshall

8.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 61: New or enhanced functions TRDPMarshall

8.2.3. Known Errors

Ticket #	Description
#33	<u>TRDP marshall and unmarshall functions shall check source size</u>

Table 62: Known Errors TRDPMarshall

8.2.4. Compatibility to Earlier Releases

Incompatible to earlier releases.

8.3. TRDPXML

8.3.1. Corrected Errors

Ticket #	Description
#9	TAU XML: The offset-address in PD Parameter form XML Config is not included in <code>parsePdParameter()</code> .
#18	<u>TAU XML: In case of setting multiple values to level parameters in debug config of XML Configuration, only the first parameter value is effective in <code>parseDebugConfiguration()</code></u>

Table 63: Corrected Errors TRDPXML

8.3.2. New or Enhanced Functions

Ticket #	Description
None	

Table 64: New or enhanced functions TRDPXML

8.3.3. Known Errors

Ticket #	Description
#2 (XLS #64)	TRDPXML: Support of mapped devices missing
#65	<u>XML - Publish and Subscribe telegram identification</u>

Table 65: Known Errors TRDPXML

8.3.4. Compatibility to Earlier Releases

Incompatible to earlier releases.

8.4. TRDPCTRL

8.4.1. Corrected Errors

Ticket #	Description
None	

Table 66: Corrected Errors TRDPCTRL

8.4.2. New or Enhanced Functions

Ticket #	Description
None	

Table 67: New or enhanced functions TRDPCTRL

8.4.3. Known Errors

Ticket #	Description
None	

Table 68: Known Errors TRDPCTRL

8.4.4. Compatibility to Earlier Releases

First release.

8.5. TRDPSpy

8.5.1. Corrected Errors

Ticket #	Description
#4 (XLS #141)	TRDPSPY: Incorrect visualisation of data packets > 1MTU
#26	<u>TRDP Spy CRC calculation needs fix</u>
#52	<u>Wireshark plugin needs to be adapted to protocol changes</u>

Table 69: Corrected Errors TRDPSpy

8.5.2. New or Enhanced Functions

Ticket #	Description
None	

Table 70: New or enhanced functions TRDPSpy

8.5.3. *Known Errors*

Ticket #	Description
None	

Table 71: Known Errors TRDP Spy

8.5.4. *Compatibility to Earlier Releases*

Incompatible to earlier releases.due to #52.

9. History Release 1.3.0.0

The following changes have been implemented since the previous release. The column ‘Ticket #.’ Contains the ticket number at <https://sourceforge.net/p/tcnopen/tickets/>. Ticket numbers marked with “XLS” referring to the now closed list “trdp/BugTracking.xls”.

9.1. TRDPLight

9.1.1. Corrected Errors

TICKET #	Description
#11	VOS: Complete VxWorks functionality
#34	<u>Subscribe to multicast address fails</u>
#70	<u>TRDPLight: Automatic Transmission of 'Me' Message accd. A.7.7.2 2nd and 5th missing</u>
#71	<u>TRDPLight: timeout==0 shall mean infinit time is not yet implemented</u>
#72	<u>TRDPLight: Windows7 vos_getInterfaces() bug</u>
#73	<u>TRDPLight: Multicast "join" fails on Windows system with two ethernet interfaces</u>
#74	<u>TRDPLight: topo counts check doesn't take into account local communication</u>
#75	<u>TRDP IF: session mutex not freed in tlc_terminate()</u>
#76	<u>TRDP PD: Wrong initialisation of frame pointer</u>
#77	<u>TRDP UTILS: wrong argument for vos_sockJoinMC()</u>
#78	<u>VOS: When the schedule policy is set to VOS_THREAD_POLICY_OTHER and the priority to '0' in Linux, creating thread is failed.</u>
#80	<u>PD/MD: Call back and counting of received multicast packets duplicated in dual homing interfaces</u>
#81	<u>PD/MD: Counts for packet loss needed</u>
#84	<u>Statistics: trdp_getStats() returns error if heap memory is used</u>
#85	<u>PD recovery in case of undetected sequenceCounter overflow</u>
#86	<u>Fix SendHello/ReceiveHello examples</u>
#88	<u>Cleanup makefiles, remove dependencies on external libraries</u>
#89	<u>TCPMD: In case of wrong length or CRC in the header the TCP connection gets unusable</u>
#91	<u>Update User Manual</u>
#92	<u>Update default UDP and TCP port numbers</u>
#94	<u>TRDP_REDUNDANT flag never evaluated</u>
#96	<u>TRDPSTATS: Distinguish between UDP and TCP listener statistics</u>
#97	<u>rdp-xmlpd-test.c subscribed telegram issue.</u>

TICKET #	Description
#98	<u>Telegram Attribute for auto/non-auto configuration needed</u>
#99	<u>userRef in debug-output (TRDP_PRINT_DBG_T) is always NULL</u>
#103	<u>C++ Interface</u>
#104	<u>PD telegrams with no data is never sent</u>
#105	<u>ERROR INSUFFICIENT BUFFER in Windows</u>
#106	<u>Add a build flag to indicate if user need to be informed on every received PD packet</u>
#107	<u>tlm_addListener does not allow to set source filtering</u>
#108	<u>tau_marshall does not always work</u>
#111	<u>'unit', 'scale', 'offset' attributes missing in TRDP_DATASET_ELEMENT</u>
#115	<u>MD: Missing parameter pktFlags in tlm_reply() and tlm_replyQuery()</u>

Table 72: Corrected Errors TRDPLight

9.1.2. New or Enhanced Functions

Ticket #	Description
#90	<u>Independent versioning for VOS</u>

Table 73: New or enhanced functions TRDPLight

9.1.3. Known Errors

Ticket #	Description
#1 (XLS #30)	MD/PD: For performance reasons a un-join shall be done after un-subscribing.
#3 (XLS #131)	TRDPSTATS: Incorrect counter for received packets on dual interface
#5 (XLS #37)	MD: For sent unicast MD TRDP assumes that only one reply may be received.
#21	<u>Time dependent functions may fail in 2038 (wrap around of timeval)</u>
#87	<u>Example application for backbone-aware network is missing</u>
#101	<u>Optional callback function on PD send</u>

Table 74: Known Errors TRDPLight

9.1.4. Compatibility to Earlier Releases

Compatible to previous release.

9.2. TRDPMarshall

9.2.1. Corrected Errors

Ticket #	Description
#33	<u>TRDP marshall and unmarshall functions shall check source size</u>
#100	<u>Marshalling/Unmarshalling functions do not allow to add datasets later</u>
#109	<u>unmarshalling: size mismatch when swapping datasetlength</u>
#110	<u>Missing: marshalling/unmarshalling when using message data</u>
#112	<u>Marshalling sets wrong datasetLength (PD)</u>

Table 75: Corrected Errors TRDPMarshall

9.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 76: New or enhanced functions TRDPMarshall

9.2.3. Known Errors

Ticket #	Description
None	

Table 77: Known Errors TRDPMarshall

9.2.4. Compatibility to Earlier Releases

Compatible to previous release.

9.3. TRDPXML

9.3.1. Corrected Errors

Ticket #	Description
#65	<u>XML – Publish and Subscribe telegram identification</u>
#102	<u>XML parser needed</u>
#113	<u>tau_xml: parsing of dataset element “type” always returns 0</u>

Table 78: Corrected Errors TRDPXML

9.3.2. New or Enhanced Functions

Ticket #	Description
None	

Table 79: New or enhanced functions TRDPXML

9.3.3. Known Errors

Ticket #	Description
#2 (XLS #64)	TRDPXML: Support of mapped devices missing
#65	<u>XML – Publish and Subscribe telegram identification</u>

Table 80: Known Errors TRDPXML

9.3.4. Compatibility to Earlier Releases

Compatible to previous release.

9.4. TRDPCTRL

9.4.1. Corrected Errors

Ticket #	Description
#13	Add ETBN control support
#79	<u>TRDP Ctrl: tau_initEcspCtrl sets data size permanently as 0</u>

Table 81: Corrected Errors TRDPCTRL

9.4.2. New or Enhanced Functions

Ticket #	Description
None	

Table 82: New or enhanced functions TRDPCTRL

9.4.3. Known Errors

Ticket #	Description
#13	Implemented but not yet tested with ETBN

Table 83: Known Errors TRDPCTRL

9.4.4. Compatibility to Earlier Releases

Compatible to previous release.

9.5. TRDPDNR

9.5.1. Corrected Errors

Ticket #	Description
#93	<u>DNR interface definition does not account for multiple network interfaces</u>

Table 84: Corrected Errors TRDPDNR

9.5.2. New or Enhanced Functions

Ticket #	Description
#8	<u>TRDP DNR: Add URI-IP address translation support</u>

Table 85: New or enhanced functions TRDPDNR

9.5.3. Known Errors

Ticket #	Description
#125	<u>tau_dnr: TCN DNS support missing</u>

Table 86: Known Errors TRDPDNR

9.5.4. Compatibility to Earlier Releases

First release.

9.6. TRDPTTI

9.6.1. Corrected Errors

Ticket #	Description
#82	<u>TTI: type for etbId in TRDP_TRAIN_DIR_T not conform to standard</u>
#83	<u>TTI: description for cstClass not acc. standard</u>
#114	<u>CRC computation for OP TRAIN DIRECTORY STATE does not accord with the standard.</u>

Table 87: Corrected Errors TRDPTTI

9.6.2. New or Enhanced Functions

Ticket #	Description
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Ticket #	Description
#7	<u>TRDPTTI: Add train topology information support</u>

Table 88: New or enhanced functions TRDPTTI

9.6.3. Known Errors

Ticket #	Description
None	

Table 89: Known Errors TRDPTTI

9.6.4. Compatibility to Earlier Releases

First release.

9.7. TRDPSpy

9.7.1. Corrected Errors

Ticket #	Description
#95	<u>TRDPSpy: Update port numbers and remove local path names</u>

Table 90: Corrected Errors TRDPSpy

9.7.2. New or Enhanced Functions

Ticket #	Description
None	

Table 91: New or enhanced functions TRDPSpy

10. History Release 1.3.1.0

The following changes have been implemented since the previous release. The column ‘Ticket #.’ Contains the ticket number at <https://sourceforge.net/p/tcnopen/tickets/>. Ticket numbers marked with “XLS” referring to the now closed list “trdp/BugTracking.xls”.

10.1. TRDPLight

10.1.1. Corrected Errors

TICKET #	Description
None	

Table 92: Corrected Errors TRDPLight

10.1.2. New or Enhanced Functions

Ticket #	Description
None	

Table 93: New or enhanced functions TRDPLight

10.1.3. Known Errors

Ticket #	Description
#1 (XLS #30)	MD/PD: For performance reasons a un-join shall be done after un-subscribing.
#3 (XLS #131)	TRDPSTATS: Incorrect counter for received packets on dual interface
#5 (XLS #37)	MD: For sent unicast MD TRDP assumes that only one reply may be received.
#21	<u>Time dependent functions may fail in 2038 (wrap around of timeval)</u>
#87	<u>Example application for backbone-aware network is missing</u>
#101	<u>Optional callback function on PD send</u>

Table 94: Known Errors TRDPLight

10.1.4. Compatibility to Earlier Releases

Compatible to previous release.

10.2. TRDPMarshall

10.2.1. Corrected Errors

Ticket #	Description
None	

Table 95: Corrected Errors TRDPMarshall

10.2.2. New or Enhanced Functions

Ticket #	Description
None	

Table 96: New or enhanced functions TRDPMarshall

10.2.3. Known Errors

Ticket #	Description
None	

Table 97: Known Errors TRDPMarshall

10.2.4. Compatibility to Earlier Releases

Compatible to previous release.

10.3. TRDPXML

10.3.1. Corrected Errors

Ticket #	Description
#116	Memory corruption using new XML library

Table 98: Corrected Errors TRDPXML

10.3.2. New or Enhanced Functions

Ticket #	Description
None	

Table 99: New or enhanced functions TRDPXML

10.3.3. Known Errors

Ticket #	Description
None	

Table 100: Known Errors TRDPXML

10.3.4. Compatibility to Earlier Releases

Compatible to previous release.

10.4. TRDPCTRL

10.4.1. Corrected Errors

Ticket #	Description
None	

Table 101: Corrected Errors TRDPCTRL

10.4.2. New or Enhanced Functions

Ticket #	Description
None	

Table 102: New or enhanced functions TRDPCTRL

10.4.3. Known Errors

Ticket #	Description
#13	Implemented but not yet tested with ETBN

Table 103: Known Errors TRDPCTRL

10.4.4. Compatibility to Earlier Releases

Compatible to previous release.

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10.5. TRDPDNR

10.5.1. Corrected Errors

Ticket #	Description
None	

Table 104: Corrected Errors TRDPDNR

10.5.2. New or Enhanced Functions

Ticket #	Description
None	

Table 105: New or enhanced functions TRDPDNR

10.5.3. Known Errors

Ticket #	Description
#125	<u>tau_dnr: TCN DNS support missing</u>

Table 106: Known Errors TRDPDNR

10.5.4. Compatibility to Earlier Releases

Compatible to previous release.

10.6. TRDPTTI

10.6.1. Corrected Errors

Ticket #	Description
None	

Table 107: Corrected Errors TRDPTTI

10.6.2. New or Enhanced Functions

Ticket #	Description
None	

Table 108: New or enhanced functions TRDPTTI

10.6.3. Known Errors

Ticket #	Description
None	

Table 109: Known Errors TRDPTTI

10.6.4. Compatibility to Earlier Releases

Compatible to previous release.

10.7. TRDPSpy

10.7.1. Corrected Errors

Ticket #	Description
None	

Table 110: Corrected Errors TRDPSpy

10.7.2. New or Enhanced Functions

Ticket #	Description
None	

Table 111: New or enhanced functions TRDPSpy

10.7.3. Known Errors

Ticket #	Description
None	

Table 112: Known Errors TRDPSpy

10.7.4. Compatibility to Earlier Releases

Compatible to previous release.

11. Problem reporting

Please report detected problems with this release to
<https://sourceforge.net/p/tcnopen/tickets>