



TRDP

Train Real Time Data Protocol

TRDP 1.0.1.0 Release Notes

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| Dissemination Level | | |
|---------------------|---|----------|
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| RE | Restricted to a group specified by the consortium (including the Commission Services) | |
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History

| | | | |
|----|------------|----------------|-----------------|
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| | | | |
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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 IEC61375-2-3.

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 IEC61375-2-3.

1.3. References/Related Documents

| Reference | Number | Title |
|-----------|---------------------|------------------------------|
| [Wire] | IEC61375-2-3 | TRDP Protocol (Annex A) |
| [TestRep] | TCN-TRDP1-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 SPY – a wireshark plugin to interpret TRDP telegrams

It does not yet include:

- TRDP LADDER – ladder support acc. to IEC61375-3-4
- TRDP TTI – a service to access the train topology information data base of the ETBN
- TRDP SDT – a service for safe data transmission according to the definition in [Wire]
- TRDP ADR – a service for IP-URI address translation
- TRDP SDL – a service for SW download support

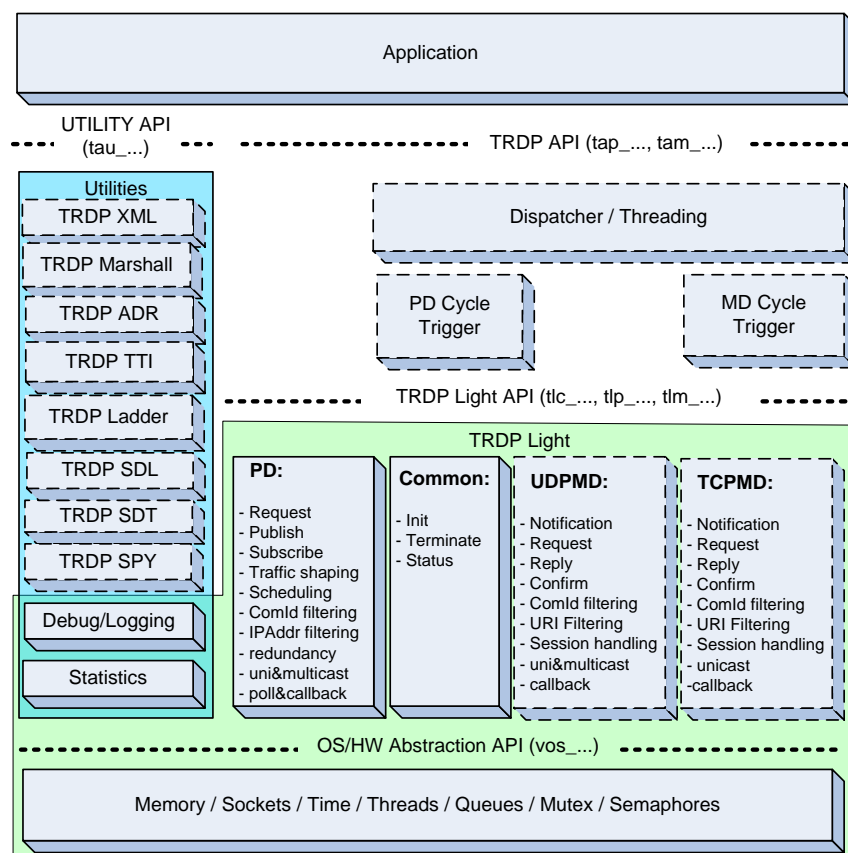


Figure 1 TRDP Modular Structure

2.2. Product Identification

TCNOpen TRDP contains the following parts:

| Abbreviation | Identification | Remark |
|--------------|----------------|-----------------|
| TRDPLight | | |
| TRDPMarshall | | |
| TRDPXML | | Win32 |
| TRDPSpy | | Win32 and Linux |
| TRDPLadder | | |
| TRDPADR | | |
| TRDPTI | | |
| TRDPSDL | | |
| TRDPSDT | | |

Table 3: Product Identifications

2.3. Targets

2.3.1. 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 32 | x86 |
| Windows PC | General | Windows XP | x86 |
| MAC | General | MacOS | x86 |

Table 4: Primary Targets

2.3.2. 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 | x86 |
| | | | |
| | | | |

Table 5: Secondary Targets

3. Delivery

3.1. Platform

| Target | File | Description |
|---------------------------------|------|--|
| Linux PC, Windows PC, MAC | | 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 |
|---------------------------------|------|--|
| Linux PC, Windows PC, MAC | | 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, MAC | | 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 |
|-----------|-----------------------------------|--------------------------------------|
| Linux32 | ..\spy\linux32\packet-trdp_spy.so | Linux32 Wireshark plugin |
| WindowsXP | ..\spy\linux32\trdp_spy.dll | Win32 Wireshark plugin |
| WindowsXP | ..\spy\win32\libxml2.dll | Resources for Win32 Wireshark plugin |
| WindowsXP | ..\spy\win32\iconv.dll | Resources for Win32 Wireshark plugin |
| WindowsXP | ..\spy\win32\readme.txt | Readme for Win32 Wireshark plugin |

Table 9: 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 enclosed in the archive file “TCNOpenTRDP-SRC x.x.x.x.zip”. This 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 win32 1.8.3 |
| 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 |
| | win32 | | Plugin for Win32 |
| 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 10: 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\trdp_proto.h | TRDP protocol definitions |
| ..\src\api\trdp_types.h | TRDP type definitions |
| ..\src\api\trdp_if_light.h | TRDP light API definitions |
| ..\src\api\tau_addr.h | URI/IP address translation support (not yet implemented) |
| ..\src\api\tau_tti.h | Train topology information support (not yet implemented) |
| ..\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 |

| File | Description |
|-------------------------------------|--|
| ..\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 |
| ..\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 |

Table 11: 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 12: SDK Delivery Content - TRDPMarshall

3.2.3. TRDPXML

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

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

| 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 13: SDK Delivery Content – TRDPXML

3.2.4. 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\packet-trdp_spy.so | Linux32 Wireshark plugin |
| ..\spy\linux32\trdp_spy.dll | Win32 Wireshark plugin |
| ..\spy\win32\libxml2.dll | Resources for Win32 Wireshark plugin |
| ..\spy\win32\iconv.dll | Resources for Win32 Wireshark plugin |
| ..\spy\win32\readme.txt | Readme for Win32 Wireshark plugin |
| | |
| ..\spy\src\INSTALL.txt | Installation guide for Wireshark plugin SDK |
| ..\spy\src\trdp_spy\README.txt | Build instruction |
| ..\spy\src\trdp_spy\plugin.rc.in | |
| ..\spy\src\trdp_spy\plugin.c | |
| ..\spy\src\trdp_spy\parsebody.h | |
| ..\spy\src\trdp_spy\parsebody.c | |
| ..\spy\src\trdp_spy\packet-trdp_spy.h | |
| ..\spy\src\trdp_spy\packet-trdp_spy.c | |
| ..\spy\src\trdp_spy\moduleinfo.nmake | |
| ..\spy\src\trdp_spy\moduleinfo.h | |
| ..\spy\src\trdp_spy\Makefile.nmake | |
| ..\spy\src\trdp_spy\Makefile.common | |
| ..\spy\src\trdp_spy\Makefile.am | |
| ..\spy\src\trdp_spy\Makefile | |
| ..\spy\src\trdp_spy\CMakeLists.txt | |
| ..\spy\src\trdp_spy\clean.bat | |
| ..\spy\src\trdp_spy\build.sh | |
| ..\spy\src\trdp_spy\build.bat | |

Table 14: SDK Delivery Content - TRDPSPy

3.2.5. 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 15: SDK Delivery Content – Resources

3.2.6. 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\ buildsettings_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 16: SDK Delivery Content – Build Environment

3.2.7. 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\mdpatterns* | MD pattern tests |
| ..\test\pdpatterns* | 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 17: SDK Delivery Content - Tests

3.2.8. 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\mdManager.c | UDP MD example |
| ..\example\mdManagerTCP.c | TCP MD example |
| ..\example\receiveHello.c | PD receive example |
| ..\example\sendHello.c | PD send example |
| ..\example\ladder\ladderApplication.c | Ladder application example |

Table 18: SDK Delivery Content - Examples

3.3. Documentation

The following documents are related to the delivered product and part of the delivery.

| # | Document | Revision | Identification |
|----|---------------------------------------|----------|---------------------|
| 1 | TRDP License Agreement | 02 | TCN-TRDP1-C-BOM-029 |
| 2 | TRDP Coding Rules | 07 | TCN-TRDP1-A-BOM-008 |
| 3 | TRDP System Requirement Specification | 09 | TCN-TRDP1-D-BOM-003 |
| 4 | TRDP Architecture & Design | 01 | TCN-TRDP2-D-BOM-019 |
| 5 | TRDP Conformance Test Specification | 02 | TCN-TRDP2-D-BOM-031 |
| 6 | TRDP Conformance Test Report | 02 | TCN-TRDP2-D-BOM-032 |
| 7 | TRDP User's Manual | 18 | TCN-TRDP2-D-BOM-011 |
| 8 | TRDP Reference Manual | 01 | TCN-TRDP2-D-BOM-033 |
| 9 | UDPMDCom architecture | 05 | TCN-TRDP2-T-FAR-001 |
| 10 | TCPMDCom architecture | 00 | TCN-TRDP2-D-CAF-008 |

Table 19: 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 x.x.x.x0.zip” into your development work area.
2. Check the files in src/vos for targets which suites 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. Linux

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

5.2. VxWorks

Not yet supported.

5.3. Windows

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

6. Changes

The following PRs (Problem Report) and NCRs (Non Conformity Reports) have been corrected since the previous release. Column '*PR no.*' contains the PR number, if a PR exists.

6.1. TRDPLight

6.1.1. Corrected Errors

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 20: Corrected Errors TRDPLight

6.1.2. New or Enhanced Functions

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 21: New or enhanced functions TRDPLight

6.1.3. Known Errors

| CR | Description |
|-----|---|
| #25 | vos_shared_mem.c - WIN32 implementation missing |
| #30 | For performance reasons a un-join shall be done after unsubscribing. |
| #57 | vos_thread.c mailbox implementation missing (functionality not used in TRDPLight) |

Table 22: Known Errors TRDPLight

6.1.4. Compatibility to Earlier Releases

First release.

6.2. TRDPMarshall

6.2.1. Corrected Errors

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 23: Corrected Errors TRDPMarshall

6.2.2. New or Enhanced Functions

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 24: New or enhanced functions TRDPMarshall

6.2.3. Known Errors

| CR | Description |
|------|-------------|
| None | |

Table 25: Known Errors TRDPMarshall

6.2.4. Compatibility to Earlier Releases

First release.

6.3. TRDPXML

6.3.1. Corrected Errors

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 26: Corrected Errors TRDPXML

6.3.2. New or Enhanced Functions

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 27: New or enhanced functions TRDPXML

6.3.3. Known Errors

| CR | Description |
|-----|---|
| #64 | TRDPXML does not yet support mapped devices |

Table 28: Known Errors TRDPXML

6.3.4. Compatibility to Earlier Releases

First release.

6.4. TRDPSpy

6.4.1. Corrected Errors

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 29: Corrected Errors TRDPSpy

6.4.2. New or Enhanced Functions

| CR | Description |
|----------------------|-------------|
| None – first release | |

Table 30: New or enhanced functions TRDPSpy

6.4.3. Known Errors

| CR | Description |
|------|-------------|
| None | |

Table 31: Known Errors TRDPSpy

6.4.4. Compatibility to Earlier Releases

First release.

7. History

First release.

8. Problem reporting

Detected problems with this release are to be reported to:

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