



Train Real Time Data Protocol

3.0.0.0 Conformance Test Report

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DOCUMENT SUMMARY SHEET

This document contains the TRDP test report

Participants

Name and Surname	Organisation	Role
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1. Introduction

1.1. Purpose

This document describes tests verifying the conformance of a TRDP implementation.

1.2. Intended Audience

This document is intended to be used for verification of the TCNOpen TRDP implementation.

1.3. References/Related Documents

Reference	Number	Title
[Wire]	IEC61375-2-3	TRDP Protocol (Annex A)
[Req]	TCN-TRDP1-D-BOM-003	TRDP System Requirement Specification
[TestRep]	TCN-TRDP1-D-BOM-032	TRDP Conformance Test Report

Table 1: References

1.4. Abbreviations and Definitions

Abbreviation	Definition

Table 2: Abbreviations and Definitions

2. Conformance Tests

The following tests verify the conformance of the TCNOpen TRDP implementation for a specified TRDP Version 3.0.0.0. For testing the programs “test/pdpatterns/trdp-pd-test-fast.c” and “test/mdpatterns/trdp-md-test-fast.c” delivered with this TRDP version shall be used as well as trdp-pd-test.c and trdp-md-test.c. The “fast” tests are applied in two queue indexing schemes. One with decimal based message cycle periods and the other with binary based message cycle periods.

For testing with vlan interfaces the program “test/pdpatterns/trdp-pd-test-vlan.c” shall be used.

For documentation of the test results [TestRep] shall be used as template.

2.1. Process Data

PD tests verify the exchange of process data between two devices A and B. All in [wire] defined PD patterns are tested.

All the test cases run continuously in parallel during the test session.

2.1.1. Testconfiguration:

IP address device A: 10.0.1.11

IP address device B: 10.0.1.101

Multicast address: 239.0.1.1

2.1.2. PD1: Windows/TCNOpen - Linux/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	Unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	Multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 3: PD Test Patterns(pdtest-windows)

2.1.3. PD2: Linux/TCNOpen - Windows/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 4: PD Test Patterns(pdtest-linux)

2.1.4. PD3: Windows/TCNOpen - Linux/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	Unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	Multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 5: PD Test Patterns(pdtest-fast-base10-windows)

2.1.5. PD4: Linux/TCNOpen - Windows/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 6: PD Test Patterns(pdtest-fast-base10-linux)

2.1.6. PD5: Windows/TCNOpen - Linux/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	Unicast	A->B, B->A	256	128	OK
				256	OK
			1432	128	OK
				256	OK
	Multicast	A->B, B->A	256	128	OK
				256	OK
			1432	128	OK
				256	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	512	OK
			1432	512	OK
	multicast / multicast	A->B->A, B->A->B	256	512	OK
			1432	512	OK

Table 7: PD Test Patterns(pdtest-fast-base2-windows)

2.1.7. PD6: Linux/TCNOpen - Windows/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	unicast	A->B, B->A	256	128	OK
				256	OK
			1432	128	OK
				256	OK
	multicast	A->B, B->A	256	128	OK
				256	OK
			1432	128	OK
				256	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	512	OK
			1432	512	OK
	multicast / multicast	A->B->A, B->A->B	256	512	OK
			1432	512	OK

Table 8: PD Test Patterns(pdtest-fast-base2-linux)

2.1.8. Testconfiguration with vlan interfaces:

Interface configuration with vlan ID: 10

IP address device A: 10.0.10.11

IP address device B: 10.0.10.42

Multicast address: 239.0.1.1

2.1.9. PD7: Windows/TCNOpen - Linux/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	Unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	Multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 9: PD Test Patterns(pdtest-vlan-windows)

2.1.10. PD8: Linux/TCNOpen - Windows/TCNOpen:

Pattern	Destination	Direction	Data Size in Bytes	Period in ms	Result
PUSH	unicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
	multicast	A->B, B->A	256	100	OK
				250	OK
			1432	100	OK
				250	OK
PULL	unicast / unicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK
	multicast / multicast	A->B->A, B->A->B	256	500	OK
			1432	500	OK

Table 10: PD Test Patterns(pdtest-vlan-linux)

All the test cases run on two target platforms - Linux and Windows.

Following table summarizes the test targets used for the specific tests:

	Device A	Device B
PD1, PD3, PD5, PD7	Windows/TCNOpen	Linux/TCNOpen
PD2, PD4, PD6, PD8	Linux/TCNOpen	Windows/TCNOpen

Table 11: PD Test Targets

2.2. Message Data

MD tests verify the exchange of message data between two devices A and B.

All defined MD patterns are tested on both supported transmission protocols TCP and UDP.

2.2.1. Testconfiguration:

For standard interfaces:

- IP address device A: 10.0.1.11
- IP address device B: 10.0.1.101
- Multicast address: 239.0.1.1

For vlan interfaces:

- IP address device A: 10.0.10.11
- IP address device B: 10.0.10.42
- Multicast address: 239.0.1.1

Following tables define the test cases performed on the two platforms and implementations:

2.2.2. MD1: Windows/TCNOpen - Linux/TCNOpen

Pro- to- col	Pattern	Destina- tion	Re- plies	Direction	Data Size in Bytes	Result			
							Fast- base10	Fast- base2	VLAN
UDP	notify	unicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	unicast/ unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	unicast/ unicast	1	A->B->A-> B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	notify	multicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	multicast/ unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	multicast/ unicast	1	A->B->A-> B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
TCP	Notify	unicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	unicast	1	A->B->A-> B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK

Table 12: MD Test Patterns

2.2.3. MD2: Linux/TCNOpen - Windows/TCNOpen

Pro- to- col	Pattern	Destina- tion	Re- plies	Direction	Data Size in Bytes	Result			
							Fast- base10	Fast- base2	VLAN
UDP	notify	unicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	unicast/ unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	unicast/ unicast	1	A->B->A- >B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	notify	multicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	multicast/ unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	multicast/ unicast	1	A->B->A- >B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
TCP	Notify	unicast	0	A->B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	unicast	1	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply/ confirm	unicast	1	A->B->A- >B	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK
	request/ reply	multicast/ unicast	?	A->B->A	64	OK	OK	OK	OK
					32768	OK	OK	OK	OK

Table 13: MD Test Patterns

All the test cases run on two target platforms - Linux and Windows.

Following table summarizes the tests performed on the two platforms and implementations:

	Device A	Device B
MD1	Windows/TCNOpen	Linux/TCNOpen
MD2	Linux/TCNOpen	Windows/TCNOpen

Table 14: MD Test Targets