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		Release	RS_BRF_01784 - AUTOSAR
		Management	communication shall support the UDP
			protocol stack

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1 Acronyms and Abbreviations

Abbreviation / Acronym:	Description:
AT	Acceptance Test
ECU	Electronic Control Unit
IUT	Implementation Under Test
LT	Lower Tester
PDU	Protocol Data Unit
SP	Service Primitive
TS	Test System
UDP	User Datagram Protocol (according to IETF RFC 768)
UT	Upper Tester
IP	Internet Protocol
ICMP	Internet Control Message Protocol
TTL	Time To Live
TOS	Type Of Service
MTU	Maximum Transmission Unit
<ltiface-m></ltiface-m>	m-th Interface of LT
<iutiface-n></iutiface-n>	n-th Interface of IUT
<iutiface-n-ip></iutiface-n-ip>	IP address of n-th Interface of IUT
<ltiface-m-ip></ltiface-m-ip>	IP address of m-th Interface of LT
SCG	Static Configuration Groups
allSystemMCastA ddr	Refers to the multicast address of All Systems on a Subnet
BroadCastAddr	Refers to the broadcast address of a EthIfCtrl

2 Related Documentation

2.1 Input documents

[1] AUTOSAR Specification of TCP/IP Stack AUTOSAR_SWS_Tcplp.pdf

[2] AUTOSAR System Template AUTOSAR_TPS_SystemTemplate.pdf

[3] AUTOSAR SRS Ethernet AUTOSAR_SRS_Ethernet.pdf

[4] AUTOSAR General Specification for Basic Software Modules AUTOSAR_SWS_BSWGeneral.pdf

[5] Specification of ECU Configuration AUTOSAR_TPS_ECUConfiguration.pdf

[6] Requirements on AUTOSAR Features AUTOSAR_RS_Features.pdf

2.2 Related standards and norms

[7] IETF RFC 768 http://tools.ietf.org/html/rfc768

[8] IETF RFC 1122 http://tools.ietf.org/html/rfc1122

2.3 Testability Protocol and Service Primitives

[9] Testability Protocol and Service Primitives
AUTOSAR_PRS_TestabilityProtocolAndServicePrimitives.pdf



3 RS_BRF_01784 - AUTOSAR communication shall support the IP protocol stack

3.1 General Test Objective and Approach

This document intends to provide a test-specification for various features of User Datagram Protocol (UDP) as mentioned in RS_BRF_01784.

It uses the UDP message headers and operations as described in Trace to SWS Item. It also uses various parts of RFC 768 and RFC 1122 as reference.

This test-chapter aims to test following requirements which are mentioned in the "AUTOSAR SWS Specification of TCP/IP Stack" for a UDP stack:

- I. [SWS_TCPIP_00060]: implement the User Datagram Protocol (UDP) as defined in IETF RFC 768.
- II. [SWS_TCPIP_00103]: fulfill the UDP related requirements specified by IETF RFC 1122, section 4.1.3.1 (Ports), 4.1.3.4 (UDP Checksums), and 4.1.3.6 (Invalid Addresses).
- III. [SWS_TCPIP_00170]: UDP-layer shall map received UDP datagrams to sockets based on the destination port as contained in the UDP protocol header and the local address (TcplpAddrld).
- IV. [SWS_TCPIP_00204]: For transmissions the Tcplp Module shall skip the calculation of the protocol checksums and fill the field with the value 0 for frames with respect to the configuration of the Ethernet Controller.

Following test sub-sections have been derived to test the above mentioned requirements:

- UDP message field value verifications.
- UDP message operation verifications.
- UDP user interface operation for unicast messages.
- UDP message reception functionality verification for unicast configurations.
- UDP message transmission: Source address selection mechanism.

This specification gives the description of required test environments and detailed test cases for executing tests.

Please refer to the "Traceability Matrix" (Appendix-A) mentioned at the end of this document, which gives a consolidated correlation between the AUTOSAR requirement, IETF RFC sections and the test cases mentioned in this document.

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3.1.1 Test System

3.1.1.1 Overview on Architecture

The basic test system architecture is depicted in the following figure:

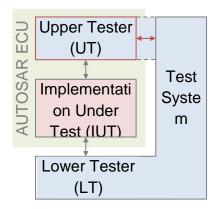


Figure 1: Basic test system architecture

Test System

- controls the Upper Tester and the Lower Tester
- evaluates the test results

The Upper Tester (UT)

- is part of the Test System
- sends / receives Testability SPs and propagates the needed actions to the IUT
- receives return values from the IUT
- communicates return values with the Lower tester to achieve test execution coordination with the Lower tester interface

The Lower Tester (LT)

- is part of the Test System
- records any Ethernet encapsulated packets during the test execution
- sends Ethernet PDUs to the IUT
- coordinates and synchronizes with the Upper Tester

3.1.1.2 Specific Requirements

The Testability Protocol and Service Primitives [9] shall be implemented as a part of the UT

in order to propagate the needed Service Primitives and actions to the IUT.

3.1.1.3 **Test Coordination Requirements**

As observation of the IUT is done by the test cases at both the Lower Tester and the Upper Tester, a test coordination procedure for collecting the local test verdicts (at LT and UT) at one central place is required. It is up to the test system designer /

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implementer to define that "central place" and to design and implement the test coordination functionality.

3.1.2 Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented. The configuration can be divided into two separate parts. The 'UDP Tester Configuration' describes variables used to parameterize the Tester. The 'UDP IUT Configuration' describes the necessary settings of the IUT in order to allow a test case to perform. Now onwards this configuration will be referenced as "UDP Test Configuration-1".

3.1.2.1 UDP Tester Configuration

The Test Configuration is changeable during runtime and contains parameters that are referenced by test cases and can be adjusted by a test case itself. In case the test configuration parameter is only referenced the following default parameters will apply.

Test configuration parameters			
Parameter Descriptions		Default values	Parameter names used during test
Ethernet Interface to be used by Tester	Name of the Ethernet interface on the host machine that tester will use.	Eth-0	<testerlface-n> [e.g. <testerlface-0>, <testerlface-1> etc]</testerlface-1></testerlface-0></testerlface-n>
Ethernet Interface to be used by IUT	Name of the Ethernet interface on the host machine that IUT will use.	As configured	<iutiface-n> [e.g. <iutiface-0>,</iutiface-0></iutiface-n>
Lower Tester IP Address pool	This is the IP address pool to be used by LT. (Note – Lower Tester may need to simulate a series of IP addressed during a test, this pool will be used for that purpose).	As configured	<host-n-ip> [e.g. <host-1-ip>, <host-2-ip> etc]</host-2-ip></host-1-ip></host-n-ip>
Lower Tester port pool	This is the port pool to be used by LT. (Note – Lower Tester may need to use multiple ports during a test, this pool will be used for	20000	<unusedudp- LT-Port-n></unusedudp-



			TO Release 1.2.0
	that purpose).		
IUT IP Address	This is the IP address of the Implementation Under Test's connection to that network.	As configured	<iutiface-n-ipaddr> [e.g. <iutiface-0-ipaddr> denotes the IP address of 0th interface of IUT]</iutiface-0-ipaddr></iutiface-n-ipaddr>
IUT port number	This is the IUT port number to be used during the test.	20001	<unusedudp- IUT-Port1></unusedudp-
Listen Time	This is the maximum time interval (in seconds) for which LT waits for a packet for cases when a certain event has been triggered on the IUT either by some protocol timer or using some external mechanism.	10 seconds	<listentime></listentime>
Tolerance Time	Time tolerance (in ms) to be used during various calculations for time sensitive tests.	500 ms	<tolerancetime></tolerancetime>
Sample UDP data	Sample UDP data used by TESTER. e.g. <udpdata-16> indicates 16 octet of UDP data. e.g. <udpdata-17> indicates 17 octet of UDP data.</udpdata-17></udpdata-16>	<udpdataud PDATAUDPDA TA up to n octets></udpdataud 	<udpdata-n></udpdata-n>
Default IP TTL	Specifies the time to live value for outgoing frames.	64	<defaultipttl></defaultipttl>
Minimum Buffer Size	Minimum Memory size in bytes reserved for TCP/IP buffers	50bytes	MIN_MEM_BUF
All System Multicast Addr	Refers to the multicast address of All Systems on a Subnet. It will be specific to a EthIfCtrl	As Configured	<allsystemmcas tAddr></allsystemmcas
Broadcast Address	Refers to the broadcast address corresponding to EthIfCtrl of an IUT interface. e.g <broadcastaddr-0> signifies broad cast address corresponding to EthIfCtrl of <iutiface-0></iutiface-0></broadcastaddr-0>	As Configured	<broadcastaddr -n></broadcastaddr



Table 1 Table of input parameters for Tester

3.1.2.2 UDP IUT Configuration

In order to make a test run possible, it is needed to configure various parameters of the IUT. Those configuration parameters can be derived from the AUTOSAR System Template. ECUC Parameters can also be used if needed especially when no corresponding System Template Parameter is present.

3.1.2.2.1 Required System Description

In order to perform the 'Test Cases' of this ATS, following basic System Description must be available.

- ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.por tNumber > <unusedUDP-IUT-Port1>
- 2. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.dyn amicallyAssigned = FALSE
- 3. For IPv4 scenario:
- 4. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address::IPv4Configuration.ipv4Address = <IUTlface-0-IPAddr>
- 5. For IPv6 scenario:
- 6. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address:: IPv6Configuration.ipv6Address = <IUTIface-0-IPAddr>
- 7. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcplpAddressType = TCPIP_UNICAST

3.1.2.2.2 Required values for TCP/IP Stack configuration parameters

- Tcplp.TcplpGeneral.TcplpUdpEnabled = TRUE
- 2. Tcplp.TcplpGeneral.TcplpBufferMemory > MIN MEM BUF
- 3. Tcplp.TcplpConfig.TcplpCtrl.TcplpEthlfCtrlRef = <IUTlface-0>
- 4. Tcplp.TcplpConfig.TcplpLocalAddr = <IUTlface-0-IPAddr>
- 5. EthGeneral.EthCtrlOffloading.EthCtrlEnableOffloadChecksumUDP = FALSE
- 6. Tcplp.TcplpConfig.TcplpLocalAddr.TcplpAddressType = TCPIP_UNICAST

3.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

3.1.2.4 Mandatory vs. Customizable Parts

All the parameters mentioned at section 3.1.2.1 and section 3.1.2.2 are mandatory parameters to run any of the below mentioned test cases.

There could be a need for few more configurations items at ECU, however they are individual test case specific and defined at each test-case level.

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3.2 General remarks

Please be aware, that some Test Cases require no reaction from the DUT in order to pass. There should be a generic test to ensure the DUT is still reactive and was not compromised by the previous test case execution. If the DUT is not reactive the previous test case execution must be interpreted as not passed.

One example could be writing a volatile information to the DUT and verify that this information is still available after the test case execution.

3.3 Service Primitives

Depending on the necessity of a test case, the test system may use various service-primitives for the IUT to take certain actions.

For the complete working model of Service Primitives please refer to [9]

Name	Description
CREATE AND BIND	Triggers the IUT to create a socket and optionally binds this socket to a port and a local IP address.
SEND DATA	Triggers the IUT to send a specified data to a specified target.
CLOSE SOCKET	Triggers the IUT to close all the open sockets which were created during a particular test case.
RECEIVE AND FORWARD	Triggers the IUT to receive data from the LT through UDP stack under test and forward back the data to UT.
CONFIGURE SOCKET	This SP is used to select and set certain parameters that can be configured on an UDP socket.

Table 2 Table of Service Primitives

3.4 Assumptions

At the beginning of each test it has to be ensured that the IUT must be in the following conditions:

- All IUT interfaces that are connected to the Test System MUST be enabled.
- All IUT interfaces that are NOT connected to The Test System MUST be disabled
- There's no other unit in the test system that can inadvertently affect a test case.



3.5 **Terminologies**

This section defines the terminologies used in the test statements. The following is a brief description of the special terminologies and reusable test steps used in the test sections.

SI. No.	Phrases	Illustrations
1	Instruct IUT to send a UDP message with source port set to <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1>	UT issues service primitive <send data=""> to instruct IUT to send a UDP message through <iutiface-0>, containing: - Source-port field set to <unusedudp-iut-port1> - Source IP Address as defined in 'TcpIpLocalAddr' container Destination-port field set to <unusedudp-lt-port> - Destination IP Address set to <host-1-ip> - Length field set to UDP header and data length - UDP data field set to 1000 bytes of data - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header.</host-1-ip></unusedudp-lt-port></unusedudp-iut-port1></iutiface-0></send>
2	Instruct IUT to send a UDP message with <udpdefaultdata> as data through <iutiface-0></iutiface-0></udpdefaultdata>	UT issues service primitive <send data=""> to instruct IUT to send a UDP message through <iutiface-0>, containing: - Source-port field set to <unusedudp-iut-port1> - Source IP Address as defined in 'TcpIpLocalAddr' container Destination-port field set to <unusedudp-lt-port> - Destination IP Address set to <host-1-ip> - Length field set to UDP header and data length - UDP data field set to "Hello world" - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header.</host-1-ip></unusedudp-lt-port></unusedudp-iut-port1></iutiface-0></send>
3	Instruct IUT to send a UDP message with <defaultipttl+n> as TTL/HopLimit through <iutiface-0></iutiface-0></defaultipttl+n>	UT issues service primitive <send data=""> to instruct IUT to send a UDP message through <iutlface-0>, containing: - Source-port field set to <unusedudp-iut-port1> - Source IP Address as defined in 'TcpIpLocalAddr' container Destination-port field set to <unusedudp-lt-port> - Destination IP Address set to <host-1-ip> - Length field set to UDP header and data length - UDP data field set to 1000 bytes of data - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header IP-TTL/HopLimit set to <defaultipttl+n></defaultipttl+n></host-1-ip></unusedudp-lt-port></unusedudp-iut-port1></iutlface-0></send>



	_	
4	Verify that IUT has received the UDP message at <unusedudp-iut-port1> containing: - One or many fields mentioned by tester.</unusedudp-iut-port1>	A. UT issues service primitive <receive and="" forward=""> to check whether IUT has received the UDP message sent from Lower Tester. B. UT will initiate an event message which will forward data portion of the received UDP messages toward the lower tester (LT). Then LT will analyze that forwarded message and perform the necessary verifications. C. The forwarding-process will continue (active phase) until the maximum amount of data requested by UT in the request-message is received. For the complete working model of this Service Primitives please refer to [9].</receive>
5	Verify that IUT discards that UDP message.	A. UT issues service primitive <receive and="" forward=""> to reset the dropCount at IUT B. LT sends an UDP message to IUT by tweaking one or many fields as per the requirement of the test case. C. LT starts sensing the medium up to (<listentime> + <tolerancetime>). D. After the above timeout and LT not receiving any relevant response from IUT, test-system instructs UT to issue service primitive <receive and="" forward=""> to check whether IUT has received the UDP message sent from LT. E. UT receives the verification-response message containing:</receive></tolerancetime></listentime></receive>
6	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut-port1> to unicast address <iutiface-0- IPAddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0- </unusedudp-iut-port1></create>	A. UT issues service primitive <create and="" bind=""> to create a UDP socket and optionally binds this socket to a port and a local IP address mentioned in the parameter.</create>



7	Assign broadcast address <broadcastaddr-0> to EthIf controller <iutiface-0></iutiface-0></broadcastaddr-0>	For the test sub network, configure the network address and subnet mask in such a way that broadcast address <broadcastaddr-0> gets set for this subnet.</broadcastaddr-0>
---	---	--

Table 3 Terminologies



3.6 UDP Topology

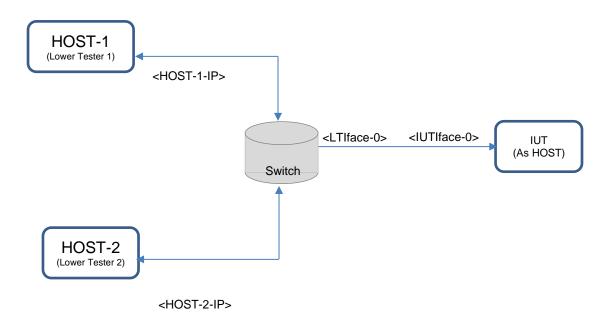
3.6.1 UDP Topology-1



DESCRIPTION:

This topology simulates HOST to HOST communication scenario between the IUT and LT. In this topology both LT and IUT should be on the same network.

3.6.2 UDP Topology-2





DESCRIPTION:

This topology simulates a hosts-to-host communication scenario between the IUT and TESTER. In this topology, the IUT is a host and TESTER simulates two HOSTs which are connected to IUT via a switch.

3.7 Test Cases

3.7.1 [ATS_UDP_00360] UDP datagram total length less than 8 octets MUST be discarded

Test Objective	e UDP datagram total length less than 8 octets MUST be discarded			
-	ATS_UDP_00360	AUTOSAR Releases		
Affected Modules	TcpIP, EthIf, Eth	State	reviewed	
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124			
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10001			
	3.2 Service Primitives (Table-1) UDP Topology-1			
Configuration Parameters	"UDP Test Configuration-1"			
	LT sends a truncated UDP message to IUT through <iutiface-0> with a length less than 8 bytes. Verify that UDP stack under test discards this UDP message.</iutiface-0>			
Needed Adaptation to other Releases	None			
	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>			
Main Test Execu	ution			
Test Steps			Pass Criteria	
	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>			
	[LT] LT sends UDP message to IUT co - truncated message: length less	_		



	bytes	
	- No UDP Data set.	
	All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	[UT]	The IUT discards the UDP message silently.
	Verify that IUT discards that UDP message.	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>	

3.7.2 [ATS_UDP_00435] UDP datagram with length value zero MUST be discarded

Test Objective	UDP datagram with length value zero MUST be discarded			
ID	ATS_UDP_00435	AUTOSAR	4.2.1 4.2.2	
		Releases		
Affected Modules	TcpIP, Ethlf, Eth	State	reviewed	
Trace to	ATR: ATR_ATR_00124			
Requirement				
on Acceptance				
Test Document				
Trace to SWS	Tcplp: SWS_TCPIP_00060			
Item	ATS_SID: SWS_SID_10002			
Requirements /	3.2 Service Primitives (Table-1)			
Reference	UDP Topology-1			
to Test				
Environment				
Configuration	"UDP Test Configuration-1"			
Parameters				
Summary	LT sends UDP message to IUT through <iutiface-0> containing Length field set to</iutiface-0>			
	zero.			
	Verify that UDP stack under test discards this UDP message.			
Needed	None			
Adaptation to				
other Releases				
Pre-conditions	UT causes the IUT to <create< th=""><th>AND BIND></th><th>a UDP socket on port <unusedudp-< th=""></unusedudp-<></th></create<>	AND BIND>	a UDP socket on port <unusedudp-< th=""></unusedudp-<>	
	IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr>			
Main Test Execu	ution			
Test Steps	Pass Criteria			
Step 1	[UT]			
•				
	UT causes the IUT to <receive< th=""><th>AND</th><th></th></receive<>	AND		
	FORWARD> from LT at <unused< th=""><th></th><th></th></unused<>			
	Port1> through <iutiface-0></iutiface-0>			
	0 =		I .	



Step 2	[LT]	
	LT sends UDP message to IUT containing:	
	- Length field set to zero	
	All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	[UТ]	The IUT discards the UDP message silently.
	Verify that IUT discards that UDP message.	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this

3.7.3 [ATS_UDP_00436] UDP datagram length value greater than actual datagram length

Test Objective	UDP datagram length value greater than actual datagram length		
ID	ATS_UDP_00436	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124	-	
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10003		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	LT sends UDP message to IUT through <iutiface-0> containing Length field set to (Length of <udpdata-16> + 8) + 1. Verify that UDP stack under test discards this UDP message.</udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>		
Main Test Execution			
Test Steps			Pass Criteria
Step 1	[UT]		



	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>	
Step 2	[LT]	
	LT sends UDP message to IUT containing:	
	- Length field set to (Length of <udpdata- 16> + 8) + 1</udpdata- 	
	- Data field set to <udpdata-16></udpdata-16>	
	All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	[UT]	The IUT discards the UDP message silently.
	Verify that IUT discards that UDP message	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this

3.7.4 [ATS_UDP_00437] UDP datagram length value less than actual datagram length

Test Objective	UDP datagram length value less	than actual c	datagram length
ID	ATS_UDP_00437	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, Ethlf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10004		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	LT sends UDP message to IUT through <iutiface-0> containing Length field set to (Length of <udpdata-16> + 8) - 1. Verify that UDP stack under test discards this UDP message</udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
			a UDP socket on port <unusedudp- Addr> for EthIf controller <iutiface-0></iutiface-0></unusedudp-



Main Test Exec	Main Test Execution		
Test Steps		Pass Criteria	
Step 1	[UT]		
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>		
Step 2	[LТ]		
	LT sends UDP message to IUT containing:		
	- Length field set to (Length of <udpdata- 16> + 8) - 1</udpdata- 		
	- Data field set to <udpdata-16></udpdata-16>		
	All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 3	[UT]	The IUT discards the UDP message silently.	
	Verify that IUT discards that UDP message.		
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>		

3.7.5 [ATS_UDP_00438] UDP datagram with max length value is accepted [classifier:SHOULD]

Test Objective	UDP datagram with max length value is accepted [classifier:SHOULD]		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10005		
-	3.2 Service Primitives (Table-1) UDP Topology-1		
Parameters	A. "UDP Test Configuration-1" B. Test Specific Configurations:		



	• [ECU Configuration Dependencies]: Tcplp.TcplpGeneral. TcplpBufferMemory = 65,527		
	TcplplpVXCtrl.TcplplpFragmentationConfig.TcplplpFragmentationRxEnabled = TRUE		
Summary	LT sends UDP message to IUT through <iut and="" data="" ma<="" maximum="" set="" supported="" th="" to="" value=""><th></th></iut>		
	Verify using UT Service Primitives that IUT's UDP message containing Length field set to r set to maximum supported octet size.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<></create>		
Main Test Exec	ution	bara orienta	
Test Steps Step 1	la cen	Pass Criteria	
отер і	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
Step 2	LT sends UDP message to IUT containing: - Length field set to maximum supported value - data set to maximum supported octet size All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 3	[UT] Verify that IUT has received the UDP message with full data.	- Verify that IUT has received the UDP message with full data.	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this	

3.7.6 [ATS_UDP_00439] UDP header with Source Port value set to zero is accepted [classifier:SHOULD]

Test Objective	UDP header with Source Port value set to zero is accepted [classifier:SHOULD]		
ID	ATS_UDP_00439		
Affected	TcpIP, EthIf, Eth	State	reviewed



		1	
Modules			
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10006		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
	and DESTINATION-UDP-PORT s	et to <unuse that IUT's U</unuse 	JDP stack successfully received the
Needed Adaptation to other Releases	None		
Pre-conditions			a UDP socket on port <unusedudp- Addr> for EthIf controller <iutiface-0></iutiface-0></unusedudp-
Main Test Execu	ıtion		
Test Steps			Pass Criteria
	[UT] UT causes the IUT to <receive forward=""> from LT at <unusedi port1=""> through <iutiface-0></iutiface-0></unusedi></receive>		
	 LT sends UDP message to IUT construction Source UDP Port field set to Destination UDP Port field to <unusedudp-iut-potential< li=""> All other fields are set to their defaults as mentioned in section 3.1.2.1 of document. </unusedudp-iut-potential<>	to 0 d set ort1> ault values	
	[UT] Verify that IUT has received the Umessage		Source UDP Port field set to 0
Post- conditions	UT issues <close socket=""> to test.</close>	IUT to close	all UDP sockets created during this

3.7.7 [ATS_UDP_00440] UDP header with Source IP address value set to multicast-address must be rejected

|--|



	unio ata d		AUTOGAR TO Release 1.2.0	
in.	rejected	ALITOOAD	404400	
ID		AUTOSAR Releases	4.2.1 4.2.2	
Affected Modules		State	reviewed	
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124			
Trace to SWS Item	Tcplp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10007			
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1			
Configuration Parameters	"UDP Test Configuration-1"			
Summary				
Needed Adaptation to other Releases	None		Ü	
Pre-conditions	IUT-Port1> to unicast address <iu< th=""><th></th><th>a UDP socket on port <unusedudp- Addr> for EthIf controller <iutiface-0></iutiface-0></unusedudp- </th></iu<>		a UDP socket on port <unusedudp- Addr> for EthIf controller <iutiface-0></iutiface-0></unusedudp- 	
Main Test Execu	ution			
Test Steps			Pass Criteria	
Step 1	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>			
Step 2	LT sends UDP message to IUT construction - Source IP Address field set to callSystemMCastAddr> - Destination UDP Port set to cun IUT-Port1> - UDP send data set to cuppData construction.	usedUDP- a-16> efault values		
	as mentioned in section 3.1.2.1 of document.	1 11115		
Step 3	[UT]		The IUT discards the UDP message silently.	



Post-	UT issues <close socket=""> to IUT to close all UDP sockets created during this</close>
conditions	test.

3.7.8 [ATS_UDP_00441] UDP header with Source IP address value set to broadcast-address must be rejected

Test Objective	UDP header with Source IP address value set to broadcast-address must be rejected		
ID	•	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10008		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	LT sends UDP message to IUT through <iutiface-0> containing source IP Address field set to <broadcastaddr-0> and destination UDP Port field set to <unusedudp-iut-port1> along with default data-set. Verify that UDP stack under test has discarded UDP message.</unusedudp-iut-port1></broadcastaddr-0></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions			a UDP socket on port <unusedudp- Addr> for EthIf controller <iutiface-0></iutiface-0></unusedudp-
Main Test Execu	ution		
Test Steps			Pass Criteria
	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>		
Step 2	[LT]		
	LT sends UDP message to IUT or - Source IP Address field set to <broadcastaddr-0> - Destination UDP Port set to <un< th=""><th>-</th><th></th></un<></broadcastaddr-0>	-	



	IUT-Port1>	
	- UDP send data set to <udpdata-16></udpdata-16>	
	All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3		The IUT discards the UDP message silently.
	Verify that IUT does not send any response	
Post-	UT issues <close socket=""> to IUT to close all UDP sockets created during this</close>	
conditions	test.	

3.8 Test Cases - UDP message operation verifications

3.8.1 [ATS_UDP_00442] IUTsends back ICMP Destination Port Unreachable message if it receives a datagram addressed to UDP port with no pending listen call[classifier:SHOULD]

•	IUTsends back ICMP Destination Port Unreachable message if it receives a datagram addressed to UDP port with no pending listen call[classifier:SHOULD]		
ID	ATS_UDP_00442	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10009		
	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
	LT sends UDP message to IUT through <iutiface-0> containing Destination IP Address field set to <iutiface-0-ipaddr> and Destination UDP Port field set to <unusedudp-iut-port1>. Ensure that there is no pending BIND call on <unusedudp-iut-port1> at IUT. IUT to send <icmp-destination-unreachable> message to LT</icmp-destination-unreachable></unusedudp-iut-port1></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket with doBind flag set to FALSE.</create>		



	Also there is no pending BIND call on <unused< th=""><th colspan="2">Also there is no pending BIND call on <unusedudp-iut-port1> at IUT.</unusedudp-iut-port1></th></unused<>	Also there is no pending BIND call on <unusedudp-iut-port1> at IUT.</unusedudp-iut-port1>		
Main Test Ex	Main Test Execution			
Test Steps	F	Pass Criteria		
Step 1	Sends message to IUT through <iutiface- 0=""> containing: - Destination IP Address field set to <iutiface-0> - Destination UDP Port field set to <unusedudp-iut-port1> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</unusedudp-iut-port1></iutiface-0></iutiface->			
Step 2	Verify that the received ICMP Destination	UT sends the ICMP Destination Unreachable message with 'code' ield of ICMP header set to 3 (i.e. Port unreachable).		
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	all UDP sockets created during this		

3.8.2 [ATS_UDP_00443] An application can send UDP message at same destination port but more than one different IP addresses

	An application can send UDP message at same destination port but more than one different IP addresses		
ID	ATS_UDP_00443	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, Ethlf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10010		
•	3.2 Service Primitives (Table-1) UDP Topology-2		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	Externally cause IUT to send a UDP message to LT where destination-port is set to <unusedudp-lt-port> and Destination IP address is set to <host-1-ip>.</host-1-ip></unusedudp-lt-port>		
	LT to receive that message and verify the destination-port and destination-ip		



	AUTOSAN TO Nelease 1.2.0		
	addresses are really set to <unusedudp-lt-port> and <host-1-ip> respectively.</host-1-ip></unusedudp-lt-port>		
	Again externally cause IUT to send a UDP message to LT where destination-port is set to <unusedudp-lt-port> and Destination IP address is set to <host-2-ip>.</host-2-ip></unusedudp-lt-port>		
	LT to receive that message and verify the des addresses are really set to <unusedudp-lt-< th=""><th></th></unusedudp-lt-<>		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<></create>		
Main Test Exec	ution		
Test Steps		Pass Criteria	
Step 1	[UT]	•	
	UT instructs the IUT to <send data=""> containing:</send>		
	 Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-1-ip></host-1-ip> 		
Step 2	[LT <host1>]</host1>	[LT]	
	Verify that the received UDP message from IUT contains	The UDP message from the IUT shall contain:	
	 destination-port set to <unusedudp- LT-Port></unusedudp- destination IP address is set to <host-1-ip></host-1-ip> 	Destination Port := <unusedudp-lt- Port> Destination IP := <host-1-ip></host-1-ip></unusedudp-lt- 	
Step 3	[UТ]	•	
	UT instructs the IUT to <send data=""> containing:</send>		
	 Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-2-ip></host-2-ip> 		
Step 4	[LT <host2>]</host2>	[LT]	
	Verify that the received UDP message from IUT contains	The UDP message from the IUT shall contain:	
	 destination-port set to <unusedudp- LT-Port></unusedudp- destination IP address is set to <host-2-ip></host-2-ip> 	Destination Port := <unusedudp-lt-port> Destination IP := <host-2-ip></host-2-ip></unusedudp-lt-port>	
		- \1001-2-11 /	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this	
	•		



3.8.3 [ATS_UDP_00444] An application can specify source port while sending UDP message

Test Objective	An application can specify source port while sending UDP message		
ID	ATS_UDP_00444	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10011		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	UT instructs the IUT to originate a UDP message with a specific source-port value and send it to LT. Once LT receives that UDP message it'll verify the source port of the UDP header is indeed set to that specific value.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>		
Main Test Execution			
Test Steps			Pass Criteria
•	[UT]		•
	UT instructs the IUT to <send destination-port="" docontaining:="" is="" set="" th="" to<=""><th>ATA></th><th></th></send>	ATA>	
	<unusedudp-lt-port></unusedudp-lt-port>Destination IP address is<host-1-ip></host-1-ip>	set to	
	[LT]Verify that the received UDP mes IUT containssource-port set to <unuse port1=""></unuse>	ssage from	The UDP message from the IUT shall contain: Source Port := <unusedudp-iut-port1></unusedudp-iut-port1>
Step 3	UT causes the IUT to <create <unusedud="" on="" port="" port1="" sockets="" udp="">+1</create>		

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·	 [UT] UT instructs the IUT to <send data=""> containing:</send> Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-1-ip></host-1-ip> 	•
Step 5	[LT] Verify that the received UDP message from IUT contains	The UDP message from the IUT shall contain: Source Port := <unusedudp-iut- port1="">+1</unusedudp-iut->
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this

3.8.4 [ATS_UDP_00445] Source port of the received UDP message can be used as the destination port while replying back

Test Objective	Source port of the received UDP message can be used as the destination port while replying back		
ID	ATS_UDP_00445	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10011		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	IUT receives a UDP message from LT with a specified source port UT instructs IUT to reply to the received UDP message. verify that the IUT uses the source port mentioned in that received UDP datagram as the destination port of the UDP datagram sent to LT.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>		



Main Test Exec	Main Test Execution			
Test Steps		Pass Criteria		
Step 1	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0> - Destination UDP Port field set to <unusedudp-iut-port1> - Source UDP port is set to <unusedudp-lt-port></unusedudp-lt-port></unusedudp-iut-port1></iutiface-0></iutiface-0>			
Star 0	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.			
Step 2	[UT]UT instructs the IUT to <send data=""> containing:</send>Destination UDP port is set to	•		
	<unusedudp-lt-port></unusedudp-lt-port>Destination IP address is set to <host-1-ip></host-1-ip>			
Step 3	[LT] Verify that the received UDP message from IUT contains:	The UDP message from the IUT shall contain: Destination Port := <unusedudp-lt-port></unusedudp-lt-port>		
	 destination-port set to <unusedudp-lt-port></unusedudp-lt-port> destination IP address is set to <host-1-ip></host-1-ip> 			
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this		

3.8.5 [ATS_UDP_00446] An application can receive UDP message at same destination port coming from more than one different IP addresses

	An application can receive UDP message at same destination port coming from more than one different IP addresses			
ID	ATS_UDP_00446 AUTOSAR 4.2.1 4.2.2 Releases			
Affected Modules	TcpIP, EthIf, Eth	State	reviewed	



	ATR: ATR_ATR_00124		
Requirement on Acceptance			
Test Document			
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10010		
	3.2 Service Primitives (Table-1)		
Reference to Test	UDP Topology-2		
Environment			
Configuration	"UDP Test Configuration-1"		
Parameters			
Summary	The LT sends UDP message to IUT containing SOURCE-IP-Address is set to <host-1-ip>, DESTINATION-UDP-PORT set to <unusedudp-iut-port1> and data set to <udpdata-16>.</udpdata-16></unusedudp-iut-port1></host-1-ip>		
	Then again LT sends UDP message to IUT co to <host-2-ip>, DESTINATION-UDP-PORT s data set to <udpdata-32>.</udpdata-32></host-2-ip>		
	IUT MUST receive both the UDP messages p	roperly	
Needed	None		
Adaptation to			
other Releases Pre-conditions	UT causes the IUT to <create and="" bind=""></create>	a LIDB cocket on port supposed IDB	
Pre-conditions	IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<>		
Main Test Execu	ution		
Test Steps		Pass Criteria	
•	[UT]	Pass Criteria	
•	[UT]	Pass Criteria	
•		Pass Criteria	
•	[UT] UT causes the IUT to <receive and<="" th=""><th>Pass Criteria</th></receive>	Pass Criteria	
•	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-< th=""><th>Pass Criteria</th></unusedudp-iut-<></receive>	Pass Criteria	
Step 1	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through</iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to</iutiface-0></iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to</iutiface-0-ipaddr></iutiface-0></iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0></iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16></udpdata-16></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0></iutiface-0></unusedudp-iut-></receive>	Pass Criteria	
Step 1	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - Source IP Address field set to <host-1-ip> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this</host-1-ip></udpdata-16></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0></iutiface-0></unusedudp-iut-></receive>	- UDP data field set to <udpdata-16></udpdata-16>	
Step 1	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0> [LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - Source IP Address field set to <host-1-ip> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document</host-1-ip></udpdata-16></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0></iutiface-0></unusedudp-iut-></receive>		



	UDP message containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	
Step 4	[UT]	
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>	
Step 5	[LT]	
	Send UDP message to IUT through IUTIface-0> containing :	
	- Destination IP Address field set to <iutiface-0-ipaddr></iutiface-0-ipaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-32></udpdata-32>	
	- Source IP Address field set to <host-2-ip></host-2-ip>	
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 6	[UT]	UDP data field set to <udpdata-32></udpdata-32>
	Verify that IUT has successfully received the UDP message containing:	
	- UDP data field set to <udpdata-32></udpdata-32>	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this

3.8.6 [ATS_UDP_00447] Length is the length in octets of the message including the header and the data

Test Objective	Length is the length in octets of the message including the header and the data		
ID	ATS_UDP_00447	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10014		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) 3.3 Input Parameters UDP Topology-1		



Configuration Parameters	"UDP Test Configuration-1"		
Summary	Instruct IUT to send a UDP message with data set to <udpdata-16>.</udpdata-16>		
	LT receives the message and verifies that the 'length' field of the UDP header is set to (<udpdata-16> + 8)</udpdata-16>		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>		
Main Test Execu	ution		
Test Steps		Pass Criteria	
	 UT instructs the IUT to <send data=""> containing:</send> Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-1-ip></host-1-ip> UDP data set to <udpdata-16></udpdata-16> 	•	
Step 2	 Verify that the received UDP message from IUT contains: UDP data set to <udpdata-16></udpdata-16> UDP Length field is set to length of (<udpdata-16> + 8)</udpdata-16> 	The UDP message from the IUT shall contain: UDP data set to <udpdata-16> UDP Length field is set to length of (<udpdata-16> + 8)</udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this	
Conditions	iooi.		

3.8.7 [ATS_UDP_00448] An application can send a UDP message with no data and the length field will be set to 8 octets in such cases

	An application can send a UDP message with no data and the length field will be set to 8 octets in such cases		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10015		
	3.2 Service Primitives (Table-1) UDP Topology-1		



to Test			
Environment			
Configuration Parameters	"UDP Test Configuration-1"		
Summary	Instruct IUT to send a UDP data of zero size.		
	LT receives the message and verifies that the to 8 octets.	'length' field of the UDP header is set	
Needed	None		
Adaptation to other Releases			
	UT causes the IUT to <create and="" bind=""> IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<></create>		
Main Test Execu	ıtion		
Test Steps		Pass Criteria	
	[UT] UT instructs the IUT to <send data=""> containing:</send>	•	
	 Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-1-ip></host-1-ip> No UDP Data set. 		
Step 2	[LT]	The UDP message from the IUT shall contain:	
	Verify that the received UDP message from IUT contains:	No UDP data.	
	No UDP data.	UDP Length field is set to 8	
	UDP Length field is set to 8		
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this	

3.8.8 [ATS_UDP_00449] IUT calculates UDP checksum correctly

Test Objective	IUT calculates UDP checksum correctly		
ID	ATS_UDP_00449	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10016		
	3.2 Service Primitives (Table-1) UDP Topology-1		



Environment			
Configuration Parameters	"UDP Test Configuration-1"		
Summary	Instruct IUT to send a UDP message with UDP Data field set to a 16 octet long data. LT receives the message and verifies that the 'checksum' field of the UDP header is correctly calculated and populated with respect to the above mentioned <udpdata-16>.</udpdata-16>		
Needed Adaptation to other Releases	None		
	UT causes the IUT to <create and="" bind=""> IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<></create>		
Main Test Execu Test Steps	ution Pass Criteria		
•	[UТ]	rass Citteria	
	UT instructs the IUT to <send data=""> containing: Destination-port is set to <unusedudp-lt-port> Destination IP address is set to <host-1-ip> UDP data set to <udpdata-16></udpdata-16></host-1-ip></unusedudp-lt-port></send>		
Step 2	 [LT] Verify that the received UDP message from IUT contains: UDP data set to <udpdata-16></udpdata-16> UDP Checksum correctly calculated and populated at checksum field. 	The UDP message from the IUT shall contain: UDP data set to <udpdata-16> UDP Checksum correctly calculated and populated at checksum field.</udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this	

3.8.9 [ATS_UDP_00450] IUT calculates UDP checksum correctly by using padding bytes

Test Objective	IUT calculates UDP checksum correctly by using padding bytes		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10016		



D :	la a a a a a a a a a a a a a a a a a a		
	3.2 Service Primitives (Table-1)		
Reference to Test	UDP Topology-1		
Environment			
	"IDD Took Configuration 4"		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	Instruct IUT to send a UDP message with UD data. LT receives the message and verifies that the	_	
	correctly calculated with respect to the above considering required amount of pad-bytes		
Needed	None		
Adaptation to			
other Releases			
Pre-conditions	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp- IUT-Port1> to unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr></unusedudp- </create>		
Main Test Execu	ution		
Test Steps		Pass Criteria	
Step 1	[UT]	•	
	UT instructs the IUT to <send data=""> containing: Destination-port is set to <unusedudp-lt-port> Destination IP address is set to <host-1-ip> UDP data set to <udpdata-17> which is just 17 octets long.</udpdata-17></host-1-ip></unusedudp-lt-port></send>		
Step 2	 Verify that the received UDP message from IUT contains: UDP data set to <udpdata-17></udpdata-17> UDP Checksum correctly calculated and populated at checksum field considering required amount of pad-bytes 	The UDP message from the IUT shall contain: UDP data set to <udpdata- 17=""> UDP Checksum correctly calculated and populated at checksum field.</udpdata->	
Post-	UT issues <close socket=""> to IUT to close</close>	e all UDP sockets created during this	
conditions	test.		

3.8.10 [ATS_UDP_00451] IUT MUST discard messages with invalid checksums

Test Objective	IUT MUST discard messages with invalid checksums			
ID	ATS_UDP_00451			
Affected Modules	TcpIP, EthIf, Eth State reviewed			
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124			



Test Document			
Trace to SWS	Tcplp: SWS_TCPIP_00103		
Item	ATS_SID: SWS_SID_10018		
	3.2 Service Primitives (Table-1)		
Reference	UDP Topology-1		
to Test	ODI Topology-1		
Environment			
Configuration	"UDP Test Configuration-1"		
Parameters	Test Comiguration 1		
Summary	LT sends a UDP message with a non-zero bu	ut invalid chackeum	
Julillary		it iiivaliu checksum	
	Ciricon ectobi enconsum>.		
	IUT must discard the message.		
Nasalaal			
	None		
Adaptation to other Releases			
	LIT ODEATE AND DIND	- LIDD I - I I - I I I DD	
Pre-conditions	UT causes the IUT to <create and="" bind=""> IUT-Port1> to unicast address <iutiface-0-ip< th=""><th></th></iutiface-0-ip<></create>		
		Addi> for Ethii controller <10 filace-0>	
Main Test Execu			
Test Steps		Pass Criteria	
Step 1	[UT]		
	UT causes the IUT to <receive and<="" th=""><th></th></receive>		
	FORWARD> from LT at <unusedudp-iut-< th=""><th></th></unusedudp-iut-<>		
	Port1> through <iutiface-0></iutiface-0>		
Step 2	[LT]		
_			
	LT sends UDP message to IUT containing:		
	- Destination UDP Port set to <unusedudp-< th=""><th></th></unusedudp-<>		
	IUT-Port1>		
	- UDP send data set to <udpdata-16></udpdata-16>		
	- UDP checksum set to		
	<pre><incorrectudpchecksum></incorrectudpchecksum></pre>		
			
	All other fields are set to their default values		
	as mentioned in section 3.1.2.1 of this		
	document.		
Step 3	[UT]	The IUT discards the UDP message	
	-	silently.	
	Verify that IUT discards the message.	 	
Post-	UT issues <close socket=""> to IUT to close</close>	all LIDP sockets created during this	
conditions	test.	can obli sockets created during tills	
Conditions	1001.		

3.8.11 [ATS_UDP_00452] IUT accepts messages with all zero filled checksums [classifier:MAY]

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			1
ID	ATS_UDP_00452	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10019		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
	all zeros. IUT must accept the me		6> where checksum field is filled with
Needed Adaptation to other Releases	None		
	IUT-Port1> to unicast address <ii< th=""><th></th><th>a UDP socket on port <unusedudp- 'Addr> for Ethlf controller <iutiface-0></iutiface-0></unusedudp- </th></ii<>		a UDP socket on port <unusedudp- 'Addr> for Ethlf controller <iutiface-0></iutiface-0></unusedudp-
Main Test Execu	ıtion		
Test Steps			Pass Criteria
	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>		
	 LT sends UDP message to IUT c Destination UDP Port set to <ur iut-port1=""></ur> UDP send data set to <udpdat< li=""> UDP checksum set to zero. All other fields are set to their def as mentioned in section 3.1.2.1 o document. </udpdat<>	nusedUDP- a-16> ault values	
Step 3	[UT] Verify that IUT has received the l message	UDP	- UDP data set to <udpdata-16></udpdata-16>
Post- conditions	UT issues <close socket=""> to test.</close>	IUT to close	e all UDP sockets created during this



3.9 Test Cases - UDP message reception - functionality verification for unicast configurations.

3.9.1 [ATS_UDP_00458] Destination IP Address – Unicast; IP Address Selected at Bind () – Unicast

Test Objective	Destination IP Address – Unicast	; IP Address	Selected at Bind () – Unicast
ID	ATS_UDP_00458	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	destination IP address set to <iu< th=""><th>ntroller <iut nrough <iut Ilface-0-IPA</iut </iut </th><th>Iface-0> Iface-0> with <udpdata-16> and .ddr>.</udpdata-16></th></iu<>	ntroller <iut nrough <iut Ilface-0-IPA</iut </iut 	Iface-0> Iface-0> with <udpdata-16> and .ddr>.</udpdata-16>
Needed Adaptation to other Releases	UT verifies that IUT accepts the n	nessage as	n passed the acceptance inter
Pre-conditions			
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	[UT] UT causes the IUT to <create <unusedui="" a="" on="" port="" port1="" socket="" udp=""> to unicast address <iutifa ipaddr=""> for EthIf controller <iutif< th=""><th>OP-IUT- ace-0-</th><th></th></iutif<></iutifa></create>	OP-IUT- ace-0-	
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>		
Step 3	[LT] Send UDP message to IUT throu	gh	



	<iutiface-0> containing : Destination IP Address field set to IUTIface-0-IPAddr> Destination UDP Port field set to unusedUDP-IUT-Port1> UDP data field set to <udpdata-16></udpdata-16> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document </iutiface-0>	
·	[UT] Verify that IUT receives the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	e all UDP sockets created during this

3.9.2 [ATS_UDP_00459] Destination IP Address – Multicast; IP Address Selected at Bind () – Unicast

Test Objective	Destination IP Address – Multicas	st; IP Addres	s Selected at Bind () – Unicast
-	ATS_UDP_00459	AUTOSAR Releases	Ÿ
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
	UT instructs the IUT to create and bind an UDP socket to Unicast address (<iutiface-0-ipaddr>. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to an IP Multicast address. UT verifies that IUT discards the message</udpdata-16></iutiface-0></iutiface-0-ipaddr>		
Needed Adaptation to other Releases	None		



Pre-condition	Pre-conditions Assign unicast address < IUTIface-0-IPAddr> to EthIf controller < IUTIface-0>			
Main Test Exe	ecution			
Test Steps		Pass Criteria		
Step 1	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to unicast address <iutiface-0- ipaddr=""> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-></unusedudp-iut-></create>			
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>			
Step 3	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to multicast address <allsystemmcastaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document</udpdata-16></unusedudp-iut-port1></allsystemmcastaddr></iutiface-0>			
Step 4	[UT] Verify that IUT discards the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT discards the UDP message		
Post- conditions	1) UT issues <close socket=""> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <iutiface-0></iutiface-0></close>			

3.9.3 [ATS_UDP_00460] Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF-match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF-match)		
ID	ATS_UDP_00460		
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		



	T		
Test Document			
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	UT instructs the IUT to create and bind an UDP socket to Unicast address (<iutiface-0-ipaddr> of <iutiface-0> LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to broadcast address. UT verifies that IUT accepts the message as it passed the acceptance filter.</udpdata-16></iutiface-0></iutiface-0></iutiface-0-ipaddr>		
	None	.,	
	Assign unicast address <iutiface-0-ipaddr> Assign broadcast address <broadcastaddr-0< th=""><th></th></broadcastaddr-0<></iutiface-0-ipaddr>		
Main Test Execu	ution		
Test Steps		Pass Criteria	
	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to unicast address <iutiface-0- ipaddr=""> for EthIf controller <iutiface-0></iutiface-0></iutiface-0-></unusedudp-iut-></create>		
	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
	Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <broadcastaddr-0> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></broadcastaddr-0></iutiface-0>		
Step 4	[UT] Verify that IUT receives the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT receives the UDP message with UDP data set to <udpdata-16></udpdata-16>	



Post-	1) UT issues <close socket=""> to IUT to close all UDP sockets created during</close>
conditions	this test.
	Restore the default address assignment to <iutiface-0></iutiface-0>

3.9.4 [ATS_UDP_00461] Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF		
_	not match)		Laura
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	UT instructs the IUT to create and bind an UDP socket to Unicast address (<iutiface-0-ipaddr> of <iutiface-0> LT sends UDP message to IUT with <udpdata-16> and destination IP address set to broadcast address which is not related to <iutiface-0> UT verifies that IUT discards the message</iutiface-0></udpdata-16></iutiface-0></iutiface-0-ipaddr>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <iutiface-0-ipaddr> to EthIf controller <iutiface-0></iutiface-0></iutiface-0-ipaddr>		
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to <create a<br="">a UDP socket on port <unusedud Port1> to unicast address <iutifac IPAddr> for EthIf controller <iutifa< th=""><th>P-IUT- ce-0-</th><th></th></iutifa<></iutifac </unusedud </create>	P-IUT- ce-0-	
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unusedu Port1> through <iutiface-0></iutiface-0></unusedu </receive>		
Step 3	[LT] Send UDP message to IUT contain - Destination IP Address field set to	J	

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	<broadcastaddr-1></broadcastaddr-1>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	[UT]	IUT discards the UDP message
	Verify that IUT discards the UDP message containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	
Post- conditions	This sues < CLOSE SOCKET> to IUT to close all UDP sockets created during this test. Restore the default address assignment to < IUTIface-0>	



4 RS_BRF_01784 - AUTOSAR communication shall support the IP protocol stack

4.1 General Test Objective and Approach

This document intends to provide a test-specification for multicast message handling features of User Datagram Protocol (UDP) as mentioned in RS_BRF_01784.

It uses the UDP message headers and operations as described in Trace to SWS Item. It also uses various parts of RFC 768 and RFC 1122 as reference.

This test-chapter aims to test following requirements which are mentioned in the "AUTOSAR SWS Specification of TCP/IP Stack" for a UDP stack:

- I. [SWS_TCPIP_00171]: For received UDP datagrams where the local address (TcplpAddrld) is a broadcast or multicast address, all matching sockets shall receive the incoming message.
- II. [SWS_TCPIP_00178]: If data is transmitted using an UDP socket which is bound to a local address (TcplpAddrld) of type Multicast, then the Tcplp shall use the IP address of the configured local address (TcplpAddrld), which is of type IP Unicast and assigned to the same EthlfCtrl, as the bound local address (TcplpAddrld) as source IP address in the IP datagram header.
- III. [SWS_TCPIP_00179]: If data is transmitted using an UDP socket which is bound to a local address (TcplpAddrld) of type Broadcast, then the Tcplp shall use the IP address of the configured local address (TcplpAddrld), which is of type IP Unicast and assigned to the same EthIfCtrl, as the bound local address (TcplpAddrld) as source IP address in the IP datagram header.

Following test sub-sections have been derived to test the above mentioned requirements:

UDP message reception - functionality verification for multicast messages.

UDP message transmission - functionality verification for multicast messages.

This specification gives the description of required test environments and detailed test cases for executing tests.

Please refer to the "Traceability Matrix" (Appendix-A) mentioned at the end of this document, which gives a consolidated correlation between the AUTOSAR requirement, IETF RFC sections and the test cases mentioned in this document.

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4.1.1 Test System

4.1.1.1 Overview on Architecture

This is same as mentioned at Section 3.1.1

4.1.1.2 Specific Requirements

Same as Section 3.1.1.2

4.1.1.3 Test Coordination Requirements

Same as Section 3.1.1.3

4.1.2 UDP Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented. Now onwards this section will be referred as "UDP Test Configuration-2".

4.1.2.1 Required ECU Extract of System Description Files

The purpose of the tests is to check the implementation of the SOP SW version as black box test. So only the final SOP System Description is required.

- ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.por tNumber > <unusedUDP-IUT-Port1>
- 2. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.dyn amicallyAssigned = FALSE
- 3. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcplpLocalAddr =<IUTlface-0-IPAddr>
- 4. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcplpAddressType = TCPIP_MULTICAST

4.1.2.2 Required ECU Configuration Description Files

- 1. Tcplp.TcplpGeneral. TcplpUdpEnabled = TRUE
- 2. Tcplp.TcplpGeneral. TcplpBufferMemory > MIN_MEM_BUF
- 3. Tcplp.TcplpConfig.TcplpCtrl.TcplpEthlfCtrlRef = <IUTlface-0>
- 4. Tcplp.TcplpConfig.TcplpCtrl.TcplpLocalAddr = <IUTlface-0-IPAddr>
- 5. EthGeneral.EthCtrlOffloading.EthCtrlEnableOffloadChecksumTCP = FALSE
- Tcplp.TcplpConfig.TcplpCtrl.TcplpLocalAddr.TcplpAddressType TCPIP_MULTICAST

4.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.



4.1.2.4 User defined Input Parameters

Following input parameters are needed for Tester to run the test cases.

Test configuration parameters			
Parameter	Descriptions	Default values	Parameter names used during test
Ethernet Interface to be used by Tester	Name of the Ethernet interface on the host machine that tester will use.	Eth-0	<testerlface-n> [e.g. <testerlface-0>, <testerlface-1> etc]</testerlface-1></testerlface-0></testerlface-n>
Ethernet Interface to be used by IUT	Name of the Ethernet interface on the host machine that IUT will use.	As configured	<iutiface-n> [e.g. <iutiface-0>,</iutiface-0></iutiface-n>
Lower Tester IP Address pool	This is the IP address pool to be used by LT. (Note – Lower Tester may need to simulate a series of IP addressed during a test, this pool will be used for that purpose).	As configured	<host-n-ip> [e.g. <host-1-ip>, <host-2-ip> etc]</host-2-ip></host-1-ip></host-n-ip>
Lower Tester port pool	This is the port pool to be used by LT. (Note – Lower Tester may need to use multiple ports during a test, this pool will be used for that purpose).	20000	<unusedudp- LT-Port-n></unusedudp-
IUT IP Address	This is the IP address of the Implementation Under Test's connection to that network.	As configured	<iutiface-n-ipaddr> [e.g. <iutiface-0-ipaddr> denotes the IP address of 0th interface of IUT]</iutiface-0-ipaddr></iutiface-n-ipaddr>



IUT port number	This is the IUT port number to be used during the test.	20001	<unusedudp- IUT-Port1></unusedudp-
Listen Time	This is the maximum time interval (in seconds) for which LT waits for a packet for cases when a certain event has been triggered on the IUT either by some protocol timer or using some external mechanism.	10 seconds	<listentime></listentime>
Tolerance Time	Time tolerance (in ms) to be used during various calculations for time sensitive tests.	500 ms	<tolerancetime></tolerancetime>
Sample UDP data	Sample UDP data used by TESTER. e.g. <udpdata-16> indicates 16 octet of UDP data. e.g. <udpdata-17> indicates 17 octet of UDP data.</udpdata-17></udpdata-16>	<udpdataud PDATAUDPDA TA up to n octets></udpdataud 	<udpdata-n></udpdata-n>
Default IP TTL	Specifies the time to live value for outgoing frames.	64	<defaultipttl></defaultipttl>
Minimum Buffer Size	Minimum Memory size in bytes reserved for TCP/IP buffers	50bytes	MIN_MEM_BUF
All System Multicast Addr	Refers to the multicast address of All Systems on a Subnet. It will be specific to a EthlfCtrl	As Configured	<allsystemmcas tAddr></allsystemmcas
Broadcast Address	Refers to the broadcast address corresponding to EthIfCtrl of an IUT interface. e.g <broadcastaddr-0> signifies broad cast address corresponding to EthIfCtrl of <iutiface-0></iutiface-0></broadcastaddr-0>	As Configured	<broadcastaddr -n></broadcastaddr

Table 3: Table of input parameters for Tester

4.1.2.5 Mandatory vs. Customizable Parts

All the parameters mentioned at section 3.1.2.1, section 3.1.2.2 and section 3.1.2.4 are mandatory parameters to run any of the below mentioned test cases. There could be a need for few more configurations items at ECU, however they are individual test case specific and defined at each test-case level.



4.1.3 Test Case D	esign)
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Not Applicable

4.2 Service Primitives

Same as section 3.2

4.3 Assumptions

Same as section 3.3

4.4 Terminologies

Same as section 3.4

4.5 **UDP Topology**

Same as section 3.5



4.6 Test Cases - UDP message reception: Acceptance Filter test

4.6.1 [ATS_UDP_00462] Destination IP Address – Unicast; IP Address Selected at Bind () – Multicast

Test Chiective	Destination IP Address Unicest	· ID Addross	Selected at Rind () Multicast
	Destination IP Address – Unicast; IP Address Selected at Bind () – Multicast ATS_UDP_00462 AUTOSAR 4.2.1 4.2.2		
ID	ATS_UDP_00462	Releases	H.Z.1 4.Z.Z
Affected	TcpIP, Ethlf, Eth	State	reviewed
Modules			
	ATR: ATR_ATR_00124	-	
Requirement			
on Acceptance Test Document			
Trace to SWS	Tcplp: SWS TCPIP 00170		
Item			
-	3.2 Service Primitives (Table-1)		
Reference to Test	UDP Topology-1		
Environment			
Configuration	"UDP Test Configuration-2"		
Parameters			
Summary		d bind an UD	P socket to multicast IP address that
	is mapped to <iutiface-0>.</iutiface-0>		
	LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and</udpdata-16></iutiface-0>		
	destination IP address set to <iutiface-0-ipaddr>.</iutiface-0-ipaddr>		
	UT verifies that IUT discards the	message	
	None		
Adaptation to			
other Releases	A	140 14	Lie to Edifferentially HITKers O
		temiviCastAc	ddr> to EthIf controller <iutiface-0></iutiface-0>
Main Test Execu	ution		b 0 " '
Test Steps	les sæs		Pass Criteria
Step 1	[UT]		
	UT causes the IUT to <create< th=""><th>AND BIND.</th><th></th></create<>	AND BIND.	
	a UDP socket on port <unusedu< th=""><th></th><th></th></unusedu<>		
	Port1> to multicast address		
	<allsystemmcastaddr> for EthIf</allsystemmcastaddr>	controller	
	<iutiface-0></iutiface-0>		
Step 2	[UT]		
	HT courses the HT to DECENT	AND	
	UT causes the IUT to <receive forward=""> from LT at <unused< th=""><th></th><th></th></unused<></receive>		
	Port1> through <iutiface-0></iutiface-0>	001 101-	
Step 3	[LT]		
	_		
	Send UDP message to IUT throu	gh	



	<iutiface-0> containing :</iutiface-0>		
	- Destination IP Address field set to <iutiface-0-ipaddr></iutiface-0-ipaddr>		
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 4	[UT]	IUT discards the UDP message	
	Verify that IUT discards the UDP message containing:		
	- UDP data field set to <udpdata-16></udpdata-16>		
Post- conditions	1) UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>		
	2) Restore the default address assignments to <iutiface-0></iutiface-0>		

4.6.2 [ATS_UDP_00463] Destination IP Address – Unicast; IP Address Selected at Bind () – Broadcast

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – Broadcast		
ID	ATS_UDP_00463	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
,	UT instructs the IUT to create and bind an UDP socket to a Broadcast IP address. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to <iutiface-0-ipaddr>. UT verifies that IUT discards the message.</iutiface-0-ipaddr></udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		



Pre-conditions Assign broadcast address < BroadCastAddr-0> to EthIf controller <iutiface-0></iutiface-0>			
Main Test Execution			
Test Steps		Pass Criteria	
Step 1	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to broadcast address <broadcastaddr-0> for EthIf controller <iutiface-0< th=""><th></th></iutiface-0<></broadcastaddr-0></unusedudp-iut-></create>		
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
Step 3	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0>		
Step 4	[UT] Verify that IUT discards the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT discards the UDP message	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignments to <iutiface-0></iutiface-0></close>		

4.6.3 [ATS_UDP_00464] Destination IP Address – Unicast; IP Address Selected at Bind () – ANY

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – ANY			
ID	ATS_UDP_00464			
Affected Modules	TcpIP, EthIf, Eth	State	reviewed	
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124			



Test Document			
Trace to SWS	Tcplp: SWS_TCPIP_00170		
Item	Γερίβ. 3W3_ΓΕΡΊΡ_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration	"UDP Test Configuration-2"		
Parameters			
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <iutiface-0>. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to <iutiface-0-ipaddr>.</iutiface-0-ipaddr></udpdata-16></iutiface-0></iutiface-0>		
	UT verifies that IUT accepts the message as i	t passed the acceptance filter	
Needed Adaptation to other Releases	None		
	Assign unicast address <iutiface-0-ipaddr></iutiface-0-ipaddr>	to Ethlf controller <iutlface-0></iutlface-0>	
Main Test Execu			
Test Steps		Pass Criteria	
·	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to ANY for EthIf controller <iutiface- 0=""></iutiface-></unusedudp-iut-></create>		
·	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
Step 3	 [LT] Send UDP message to IUT through IUTIface-0> containing: Destination IP Address field set to IUTIface-0-IPAddr> Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1> UDP data field set to <udpdata-16></udpdata-16> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document 		
	[UT] Verify that IUT receives the UDP message containing:	IUT receives the UDP message with UDP data set to <udpdata-16></udpdata-16>	



	- UDP data field set to <udpdata-16></udpdata-16>
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>

4.6.4 [ATS_UDP_00465] Destination IP Address – Unicast (not exact match with interface); IP Address Selected at Bind () – ANY

	1		
Test Objective	Destination IP Address – Unicast (not exact match with interface); IP Address		
	Selected at Bind () – ANY		
ID	ATS_UDP_00465	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124	•	•
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <iutiface-0>. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to (<iutiface-0-ipaddr> + 1). UT verifies that IUT discards the message as it doesn't pass the acceptance filter.</iutiface-0-ipaddr></udpdata-16></iutiface-0></iutiface-0>		
Needed Adaptation to other Releases	None	<u> </u>	· ·
Pre-conditions	Assign unicast address <iutiface< th=""><th>e-0-IPAddr></th><th>to EthIf controller <iutiface-0></iutiface-0></th></iutiface<>	e-0-IPAddr>	to EthIf controller <iutiface-0></iutiface-0>
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to <create <unusedul="" a="" on="" port="" port1="" socket="" udp=""> to ANY for EthIf controller 0></create>	OP-IUT-	
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>		
Step 3	[LT] Send UDP message to IUT throu	gh	



	<iutiface-0> containing :</iutiface-0>		
	- Destination IP Address field set to (<iutiface-0-ipaddr>+1)</iutiface-0-ipaddr>		
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 4	[UT]	IUT discards the UDP message	
	Verify that IUT discards the UDP message containing:		
	- UDP data field set to <udpdata-16></udpdata-16>		
Post- conditions	1) UT issues <close socket=""> to IUT to clothis test.</close>	· ·	
	2) Restore the default address assignment to <iutiface-0></iutiface-0>		

4.6.5 [ATS_UDP_00466] Destination IP Address – Unicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00466	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-		
Configuration Parameters	"UDP Test Configuration-2"		
	UT instructs the IUT to create and bind an UDP socket to TCPIP_LOCALADDRID_ANY (i.e. wildcard for any IP address on any interface). 1) LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to <iutiface-0-ipaddr>. 2) UT verifies that IUT accepts the message as it passed the acceptance filter</iutiface-0-ipaddr></udpdata-16></iutiface-0>		
Needed Adaptation to	None		



other Releases	s	
Pre-conditions	Assign unicast address <iutlface-0-ipaddr></iutlface-0-ipaddr>	to EthIf controller <iutiface-0></iutiface-0>
Main Test Exe	cution	
Test Steps		Pass Criteria
Step 1	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.</unusedudp-iut-></create>	
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>	
Step 3	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <iutiface-0-ipaddr> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></iutiface-0-ipaddr></iutiface-0>	
Step 4	[UT] Verify that IUT accepts the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>	

4.6.6 [ATS_UDP_00467] Destination IP Address – Unicast; IP Address Selected at Bind () – w/o bind

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – w/o bind		
ID	ATS_UDP_00467		
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		



		AUTOSAK TC Release 1.2.0
Test Document		
Trace to SWS	Tcplp: SWS_TCPIP_00170	
Item		
Requirements /	3.2 Service Primitives (Table-1)	
Reference	UDP Topology-1	
to Test		
Environment		
Configuration	"UDP Test Configuration-2"	
Parameters		
Summary	UT instructs the IUT to create an UDP socket	and do not bind it to ANY IP address.
	LT sends UDP message to IUT through <iuti <iutiface-0-ipa="" address="" destination="" discards="" ip="" iut="" message.<="" set="" th="" that="" the="" to="" ut="" verifies=""><th></th></iuti>	
Needed	None	
Adaptation to other Releases	rvone	
Pre-conditions	Assign unicast address <iutiface-0-ipaddr></iutiface-0-ipaddr>	to Ethlf controller <iutlface-0></iutlface-0>
Main Test Execu		
Test Steps		Pass Criteria
Step 1	UT causes the IUT to <create and="" bind=""></create>	
	a UDP socket with <i>doBind</i> flag set to FALSE	
Step 2	[UT]	
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>	
Step 3	[LT]	
	Send UDP message to IUT through <iutiface-0> containing :</iutiface-0>	
	- Destination IP Address field set to <iutiface-0-ipaddr></iutiface-0-ipaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	 All other fields are set to their default values as mentioned in section 3.1.2.1 of this document. 	
Step 4	[UT]	IUT discards the UDP message
	Verify that IUT discards the UDP message containing:	_
	- UDP data field set to <udpdata-16></udpdata-16>	
Post-	UT issues <close socket=""> to IUT to close</close>	all UDP sockets created during this
conditions	test.	3
	<u> </u>	



4.6.7 [ATS_UDP_00468] Destination IP Address - Multicast; IP Address Selected at Bind () - Multicast (exact match)

	7			
Test Objective	Destination IP Address – Multica (exact match)	st; IP Addres	ss Selected at Bind () – Multicast	
ID	ATS_UDP_00468	AUTOSAR Releases	4.2.1 4.2.2	
Affected Modules	TcpIP, EthIf, Eth	State	reviewed	
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124			
Trace to SWS Item	Tcplp: SWS_TCPIP_00171			
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1			
Configuration Parameters	"UDP Test Configuration-2"			
Summary	UT instructs the IUT to create and bind an UDP socket to multicast IP address that is mapped to <iutiface-0>. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to a matching multicast IP address. UT verifies that IUT accepts the message as it passed the acceptance filter</udpdata-16></iutiface-0></iutiface-0>			
Needed Adaptation to other Releases	None			
Pre-conditions	Assign multicast address <allsystemmcastaddr> to EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr>			
Main Test Execu	ution			
Test Steps			Pass Criteria	
Step 1	[UT] UT causes the IUT to <create <unusedu="" a="" on="" port="" port1="" socket="" udp=""> to multicast address <allsystemmcastaddr> for EthIf <iutiface-0></iutiface-0></allsystemmcastaddr></create>	DP-IUT-		
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>			
Step 3	[LT] Send UDP message to IUT throus <iutiface-0> containing: - Destination IP Address field set</iutiface-0>			



	<allsystemmcastaddr></allsystemmcastaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	[UT]	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>
	Verify that IUT accepts the UDP message containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to clothis test. Restore the default address assignments to</close>	_
	,	

4.6.8 [ATS_UDP_00469] Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (not exact match)

•	Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (not exact match)		
ID	ATS_UDP_00469	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00171		
•	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
	UT instructs the IUT to create and bind an UDP socket to multicast IP address that is mapped to <iutiface-0>. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to a multicast IP address that doesn't match with the multicast IP address bound to the socket. UT verifies that IUT discards the message as it doesn't pass the acceptance filter.</udpdata-16></iutiface-0></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allsys< th=""><th>temMCastAc</th><th>ddr> to EthIf controller <iutiface-0></iutiface-0></th></allsys<>	temMCastAc	ddr> to EthIf controller <iutiface-0></iutiface-0>



Main Test Execution			
Test Steps		Pass Criteria	
Step 1	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to multicast address <allsystemmcastaddr> for EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr></unusedudp-iut-></create>		
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
Step 3	[LT] Send UDP message to IUT through < IUTIface-0> containing: - Destination IP Address field set to (<allsystemmcastaddr>+1) - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></allsystemmcastaddr>		
Step 4	[UT] Verify that IUT discards the UDP message containing: - UDP data field set to <udpdata-16< td=""><td>IUT discards the UDP message</td></udpdata-16<>	IUT discards the UDP message	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignments to <iutiface-0></iutiface-0></close>		

4.6.9 [ATS_UDP_00470] Destination IP Address – Multicast; IP Address Selected at Bind () – Broadcast

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – Broadcast		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		



		AUTOGAN TO Nelease 1.2.0
Trace to SWS Item	Tcplp: SWS_TCPIP_00171	
	3.2 Service Primitives (Table-1)	
Reference	UDP Topology-1	
to Test		
Environment	WIDD T 10 6 W 01	
Configuration Parameters	"UDP Test Configuration-2"	
Summary	UT instructs the IUT to create and bind an UD	P socket to a Broadcast IP address.
	LT sends UDP message to IUT through <iuti a="" ad<="" address="" destination="" ip="" multicast="" set="" th="" to=""><th></th></iuti>	
	UT verifies that IUT discards the message	
Needed Adaptation to other Releases	None	
	Assign broadcast address <broadcastaddr-0< th=""><th>> to EthIf controller <iutiface-0></iutiface-0></th></broadcastaddr-0<>	> to EthIf controller <iutiface-0></iutiface-0>
Main Test Execu		
Test Steps		Pass Criteria
Step 1	[UT]	
	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to broadcast address < BroadCastAddr-0> for EthIf controller <iutiface-0></iutiface-0></unusedudp-iut-></create>	
Step 2	[UT]	
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>	
Step 3	[LT]	
	Send UDP message to IUT through <iutiface-0> containing :</iutiface-0>	
	Destination IP Address field set to <allsystemmcastaddr></allsystemmcastaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	 All other fields are set to their default values as mentioned in section 3.1.2.1 of this document. 	
Step 4	[UT]	IUT discards the UDP message
	Verify that IUT discards the UDP message containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	



Post-	1) UT issues <close socket=""> to IUT to close all UDP sockets created during</close>
conditions	this test.
	Restore the default address assignments to <iutiface-0></iutiface-0>

4.6.10 [ATS_UDP_00471] Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-match scenario)

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-match scenario)		
ID	ATS_UDP_00471	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, Ethlf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00171		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <iutiface-0> LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to an IP multicast address. UT verifies that IUT accepts the message as it passed the acceptance filter.</udpdata-16></iutiface-0></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allsystemmcastaddr> to EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr>		
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	[UT] UT causes the IUT to <create <unusedud="" a="" on="" port="" port1="" socket="" udp=""> > to ANY for EthIf controlle <iutiface-0></iutiface-0></create>	P-IUT-	
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unusedl port1=""> through <iutiface-0></iutiface-0></unusedl></receive>		
Step 3	[LT] Send UDP message to IUT throug	jh	



	<iutiface-0> containing :</iutiface-0>	
	- Destination IP Address field set to <allsystemmcastaddr></allsystemmcastaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	[UT]	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>
	Verify that IUT accepts the UDP message containing:	ODI data set to CODI Data-102
	- UDP data field set to <udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignments to <iutiface-0></iutiface-0></close>	

4.6.11 [ATS_UDP_00472] Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-not-match scenario)

	Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-not-match scenario)		
ID	ATS_UDP_00472	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
•	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
,	UT instructs the IUT to create and bind an UDP socket to ANY address of <iutiface-0>. LT sends UDP message to IUT with <udpdata-16> and destination IP address set to an IP multicast address which is not related to <iutiface-0> UT verifies that IUT discards the message as it doesn't pass the acceptance filter</iutiface-0></udpdata-16></iutiface-0>		
Needed Adaptation to	None		



other Releases				
Pre-conditions	Assign unicast address <iutiface-0-ipaddr></iutiface-0-ipaddr>	to EthIf controller <iutiface-0></iutiface-0>		
Main Test Exec	Main Test Execution			
Test Steps		Pass Criteria		
Step 1	[UT] UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> > to ANY for EthIf controller <iutiface-0></iutiface-0></unusedudp-iut-></create>			
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>			
Step 3	[LT] Send UDP message to IUT containing: - Destination IP Address field set to <allsystemmcastaddr+1> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document</udpdata-16></unusedudp-iut-port1></allsystemmcastaddr+1>			
Step 4	[UT] Verify that IUT discards the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT discards the UDP message		
Post- conditions	UT issues <close socket=""> to IUT to clothis test. Restore the default address assignments to</close>	_		

4.6.12 [ATS_UDP_00473] Destination IP Address – multicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

Test Objective	Destination IP Address – multicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00473		
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		



Test Document			
Trace to SWS	Tcplp: SWS TCPIP 00170		
Item	терір. 6006_101 ії _00170		
	3.2 Service Primitives (Table-1)		
Reference	UDP Topology-1		
to Test Environment			
Configuration	WIDD Took Confirmation O"		
Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UD		
	TCPIP_LOCALADDRID_ANY (i.e. wildcard fo	r any IP address on any interface).	
	1) LT sends UDP message to IUT throu	ah all ITIfaca () with al IDBData 16	
	and destination IP address set to <allsystemn< th=""><th></th></allsystemn<>		
	and destination in address set to valleysterning	would tall?.	
	2) UT verifies that IUT accepts the mess	age as it passed the acceptance filter.	
Needed	None		
Adaptation to			
other Releases			
Pre-conditions	Enable Ethlf controllers at <iutiface-0> of IU</iutiface-0>		
	Assign multicast address <allsystemmcastac< th=""><th>ddr> to EthIf controller <iutiface-0></iutiface-0></th></allsystemmcastac<>	ddr> to EthIf controller <iutiface-0></iutiface-0>	
Main Test Execu			
Test Steps		Pass Criteria	
Step 1	[UT]		
	LIT ODEATE AND DIND		
	UT causes the IUT to <create and="" bind=""></create>		
	a UDP socket on port <unusedudp-iut- Port1> to TCPIP_LOCALADDRID_ANY for</unusedudp-iut- 		
	any EthIf controllers of IUT.		
Step 2			
	UT causes the IUT to <receive and<="" th=""><th></th></receive>		
	FORWARD> from LT at <unusedudp-iut-< th=""><th></th></unusedudp-iut-<>		
	Port1> through <iutiface-0></iutiface-0>		
Step 3	[LT]		
	Cond LIDD magazara ta IIIT the second		
	Send UDP message to IUT through <iutiface-0> containing :</iutiface-0>		
	The thrace of containing.		
	- Destination IP Address field set to <		
	allSystemMCastAddr>		
	- Destination UDP Port field set to		
	<unusedudp-iut-port1></unusedudp-iut-port1>		
	LIDD data field askto LIDDD-t- 40		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values		
	as mentioned in section 3.1.2.1 of this		
	document.		
Step 4	[UT]	IUT accepts the UDP message with	
		UDP data set to <udpdata-16></udpdata-16>	
	Verify that IUT accepts the UDP message		



	containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	
Post-	1) UT issues <close socket=""> to IUT to clo</close>	ose all UDP sockets created during
conditions	this test.	
	2) Restore the default address assignment to	<iutiface-0></iutiface-0>

4.6.13 [ATS_UDP_00474] Destination IP Address - Multicast; IP Address Selected at Bind () - w/o bind

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – w/o bind		
-	ATS_UDP_00474	AUTOSAR Releases	· ·
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create an UDP socket and do not bind it to any IP address. LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to a multicast address. UT verifies that IUT discards the message</udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Enable EthIf controllers at <iutiface-0> of IUT. Assign multicast address <allsystemmcastaddr> to EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr></iutiface-0>		
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to <create a="" dobind="" flag="" se<="" socket="" th="" udp="" with=""><th></th><th></th></create>		
	[UT] UT causes the IUT to <receive forward=""> from LT at <unused port1=""> through <iutiface-0></iutiface-0></unused></receive>		
Step 3	[LT] Send UDP message to IUT throu	gh	



	<iutiface-0> containing :</iutiface-0>	
	- Destination IP Address field set to <allsystemmcastaddr></allsystemmcastaddr>	
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>	
	- UDP data field set to <udpdata-16></udpdata-16>	
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	[UT]	IUT discards the UDP message
	Verify that IUT discards the UDP message containing:	
	- UDP data field set to <udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close test.</close>	all UDP sockets created during this

4.6.14 [ATS_UDP_00475] Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF-match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF-match)		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, Ethlf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to a multicast IP address that is mapped to <iutiface-0> LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to broadcast address. UT verifies that IUT accepts the message as it passed the acceptance filter.</udpdata-16></iutiface-0></iutiface-0>		
Needed Adaptation to other Releases	None		



Pre-conditions	Assign multicast address <allsystemmcastaddr> for EthIf controller <iutiface-0> Assign broadcast address <broadcastaddr-0> for EthIf controller <iutiface-0></iutiface-0></broadcastaddr-0></iutiface-0></allsystemmcastaddr>		
Main Test Exec		Total Zum controller the ringer of	
Test Steps		Pass Criteria	
Step 1	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- Port1> to multicast address <allsystemmcastaddr> for EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr></unusedudp-iut- </create>		
Step 2	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
Step 3	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <broadcastaddr-0> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></broadcastaddr-0></iutiface-0>		
Step 4	[UT] Verify that IUT receives the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>		

4.6.15 [ATS_UDP_00476] Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF not match)		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		



Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
	UT instructs the IUT to create and bind an UDP socket to multicast address that is mapped to <iutiface-0> LT sends UDP message to IUT with <udpdata-16> and destination IP address set to broadcast address which is not related to <iutiface-0> UT verifies that IUT discards the message.</iutiface-0></udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allsystemmcastac< th=""><th>ddr> for Ethlf controller <iutlface-0></iutlface-0></th></allsystemmcastac<>	ddr> for Ethlf controller <iutlface-0></iutlface-0>	
Main Test Execu			
Test Steps		Pass Criteria	
•	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to multicast address <allsystemmcastaddr> for EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr></unusedudp-iut-></create>		
·	[UT] UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut- port1=""> through <iutiface-0></iutiface-0></unusedudp-iut-></receive>		
	[LT] Send UDP message to IUT containing: - Destination IP Address field set to <broadcastaddr-1> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.</udpdata-16></unusedudp-iut-port1></broadcastaddr-1>		
Step 4	Verify that IUT discards the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT discards the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	
	1) UT issues <close socket=""> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <iutiface-0></iutiface-0></close>		



4.6.16 [ATS_UDP_00477] Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF-match)

	.		0 1 1 1 10 10 10 11 14=1
Test Objective	Destination IP Address match)	- Broadcast; IP Addr	ress Selected at Bind () – Broadcast (IF-
ID	ATS_UDP_00477	AUTOSAR Releases	R 4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124	1	
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to a broadcast IP address that is mapped to <iutiface-0> LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to broadcast address.</udpdata-16></iutiface-0></iutiface-0>		
	UT verifies that IUT accepts the message as it passed the acceptance filter		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign broadcast addre	ess <broadcastaddr-< th=""><th>0> for EthIf controller <iutiface-0></iutiface-0></th></broadcastaddr-<>	0> for EthIf controller <iutiface-0></iutiface-0>
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to < a UDP socket on port < Port1> to broadcast ad <broadcastaddr-0> for <iutiface-0></iutiface-0></broadcastaddr-0>	unusedUDP-IUT- dress	>
Step 2	[UT] UT causes the IUT to < FORWARD> from LT a Port1> through <iutifa< th=""><th>t <unusedudp-iut-< th=""><th></th></unusedudp-iut-<></th></iutifa<>	t <unusedudp-iut-< th=""><th></th></unusedudp-iut-<>	
Step 3	[LT] Send UDP message to <iutiface-0> containing - Destination IP Addres <broadcastaddr-0> - Destination UDP Port</broadcastaddr-0></iutiface-0>	g : s field set to	



	<unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 4	[UT]	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>	
	Verify that IUT receives the UDP message containing:		
	- UDP data field set to <udpdata-16></udpdata-16>		
Post-	1) UT issues <close socket=""> to IUT to close all UDP sockets created during</close>		
	this test. 2) Restore the default address assignment to <iutiface-0></iutiface-0>		

4.6.17 [ATS_UDP_00478] Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF not match)		
ID	ATS_UDP_00478	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
	UT instructs the IUT to create and bind an UDP socket to broadcast address that is mapped to <iutiface-0> LT sends UDP message to IUT with <udpdata-16> and destination IP address set to broadcast address not related to <iutiface-0> UT verifies that IUT discards the message</iutiface-0></udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign broadcast address <broad< th=""><th>dCastAddr-0</th><th>> for EthIf controller <iutiface-0></iutiface-0></th></broad<>	dCastAddr-0	> for EthIf controller <iutiface-0></iutiface-0>
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to <create< th=""><th>AND BIND></th><th></th></create<>	AND BIND>	



	a UDP socket on port <unusedudp-iut- Port1> to broadcast address <broadcastaddr-0> for EthIf controller <iutiface-0></iutiface-0></broadcastaddr-0></unusedudp-iut- 		
Step 2	[UT]		
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>		
Step 3	[LT]		
	Send UDP message to IUT containing :		
	- Destination IP Address field set to <broadcastaddr-1></broadcastaddr-1>		
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 4	[UT]	IUT discards the UDP message	
	Verify that IUT discards the UDP message containing:		
	- UDP data field set to <udpdata-16></udpdata-16>		
Post- conditions	1) UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>		
	2) Restore the default address assignment to <iutiface-0></iutiface-0>		

4.6.18 [ATS_UDP_00479] Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF-match scenario)

_	Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF-match scenario)		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-1		



0 (!	(UIDD T1 O5 0"		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to a ANY address that is mapped to <iutiface-0></iutiface-0>		
	LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to broadcast address.</udpdata-16></iutiface-0>		
	UT verifies that IUT has successfully received the message as it passed the acceptance filter.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <iutiface-0-ipaddr> Assign broadcast address <broadcastaddr-0< th=""><th></th></broadcastaddr-0<></iutiface-0-ipaddr>		
Main Test Execu	ution		
Test Steps		Pass Criteria	
Step 1	UT causes the IUT to <create and="" bind=""> a UDP socket on port <unusedudp-iut- port1=""> to ANY for EthIf controller <iutiface- 0=""></iutiface-></unusedudp-iut-></create>		
Step 2	[UT]		
	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>		
Step 3	[LT]		
	Send UDP message to IUT through <iutiface-0> containing :</iutiface-0>		
	- Destination IP Address field set to <broadcastaddr-0></broadcastaddr-0>		
	- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata-16></udpdata-16>		
	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 4	[UT]	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>	
	Verify that IUT accepts the UDP message containing:		
	- UDP data field set to <udpdata-16></udpdata-16>		
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>		
	2) Restore the default address assignment to <iutiface-0></iutiface-0>		



4.6.19 [ATS_UDP_00480] Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF not match scenario)

Test Objective	Destination IP Address – Broadca	st: IP Addre	ess Selected at Bind () – ANY (IF not
	match scenario)	ot, ii 7taare	7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and mapped to <iutiface-0> LT sends UDP message to IUT was to broadcast address not related to the control of the control of</iutiface-0>	vith <udpda o <iutiface< th=""><th>ata-16> and destination IP address set</th></iutiface<></udpda 	ata-16> and destination IP address set
Needed	None	nessage.	
Adaptation to other Releases	Notie		
Pre-conditions	Assign unicast address <iutiface< th=""><th>-0-IPAddr></th><th>to EthIf controller <iutiface-0></iutiface-0></th></iutiface<>	-0-IPAddr>	to EthIf controller <iutiface-0></iutiface-0>
Main Test Execu	ution		
Test Steps			Pass Criteria
	UT causes the IUT to <create <unusedud="" a="" on="" port="" port1="" socket="" udp=""> to ANY for EthIf controller 0></create>	P-IUT-	
Step 2	[UT] UT causes the IUT to <receive forward=""> from LT at <unusedi port1=""> through <iutiface-0></iutiface-0></unusedi></receive>		
Step 3	[LT]		
	Send UDP message to IUT contai	ining :	
	 Destination IP Address field set the set	to	
	Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>		
	- UDP data field set to <udpdata< th=""><th>-16></th><th></th></udpdata<>	-16>	



	 All other fields are set to their default values as mentioned in section 3.1.2.1 of this document. 	
Step 4	[UT] Verify that IUT discards the UDP message containing:	IUT discards the UDP message
	- UDP data field set to <udpdata-16></udpdata-16>	
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>	

4.6.20 [ATS_UDP_00481] Destination IP Address – Broadcast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

-	-		
Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00481	AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to TCPIP_LOCALADDRID_ANY (i.e. wildcard for any IP address on any interface). 1) LT sends UDP message to IUT through <iutiface-0> with <udpdata-16> and destination IP address set to <broadcastaddr-0>. 2) UT verifies that IUT accepts the message as it passed the acceptance filter.</broadcastaddr-0></udpdata-16></iutiface-0>		
Needed Adaptation to other Releases	None		
	Enable EthIf controllers at <iutiface-0> of IUT. Assign broadcast address <broadcastaddr-0> for EthIf controller <iutiface-0></iutiface-0></broadcastaddr-0></iutiface-0>		
Main Test Execu	Main Test Execution		
Test Steps			Pass Criteria
Step 1	[UT] UT causes the IUT to <create are="" th="" unusedui<=""><th></th><th></th></create>		



	Port1> to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.	
Step 2	UT causes the IUT to <receive and="" forward=""> from LT at <unusedudp-iut-port1> through <iutiface-0></iutiface-0></unusedudp-iut-port1></receive>	
Step 3	[LT] Send UDP message to IUT through <iutiface-0> containing: - Destination IP Address field set to <broadcastaddr-0> - Destination UDP Port field set to <unusedudp-iut-port1> - UDP data field set to <udpdata-16> - All other fields are set to their default values</udpdata-16></unusedudp-iut-port1></broadcastaddr-0></iutiface-0>	
	as mentioned in section 3.1.2.1 of this document.	
Step 4	Verify that IUT accepts the UDP message containing: - UDP data field set to <udpdata-16></udpdata-16>	IUT accepts the UDP message with UDP data set to <udpdata-16></udpdata-16>
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>	

4.6.21 [ATS_UDP_00482] Destination IP Address – Broadcast; IP Address Selected at Bind () – w/o bind

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – w/o bind		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00170		
	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		



LT sends UDP message to IUT through destination IP address set to a broadca UT verifies that IUT discards the messa Needed None			
destination IP address set to a broadca UT verifies that IUT discards the messa Needed None	ast address.		
destination IP address set to a broadca UT verifies that IUT discards the messa Needed None	ast address.		
Needed None	age		
Needed None	age		
Adaptation to other Releases			
Pre-conditions Enable EthIf controllers at <iutiface-0:< th=""><th>of IUT</th></iutiface-0:<>	of IUT		
	Assign multicast address <allsystemmcastaddr> to EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr>		
Main Test Execution			
Test Steps	Pass Criteria		
Step 1 UT causes the IUT to <create and="" i<="" th=""><th></th></create>			
a UDP socket with doBind flag set to F.	ALSE		
Step 2 [UT]			
Step 2 [O1]			
UT causes the IUT to <receive and<="" th=""><th></th></receive>			
FORWARD> from LT at <unusedudp-< th=""><th></th></unusedudp-<>			
Port1> through <iutiface-0></iutiface-0>			
Step 3 [LT]			
Sand LIDD massage to U.T. through			
Send UDP message to IUT through <iutiface-0> containing :</iutiface-0>			
The final of containing .			
- Destination IP Address field set to			
<broadcastaddr-0></broadcastaddr-0>			
Destination LIDD Part field set to			
- Destination UDP Port field set to <unusedudp-iut-port1></unusedudp-iut-port1>			
- UDP data field set to <udpdata-16></udpdata-16>			
	.		
- All other fields are set to their default	values		
document.	as mentioned in section 3.1.2.1 of this document.		
Step 4 [UT]	IUT discards the UDP message		
Verify that IUT discards the UDP mess	sage		
containing:			
- UDP data field set to <udpdata-16></udpdata-16>			
	to close all UDP sockets created during this		
conditions test.			

4.7 Test Cases - UDP message transmission: Source address selection mechanism.

4.7.1 [ATS_UDP_00483] Source address selection when "Multicast IP address is selected during Bind"

Test Objective	Source address selection when "Multicast IP address is selected during Bind"		
ID		AUTOSAR Releases	4.2.1 4.2.2
Affected Modules	TcpIP, EthIf, Eth	State	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	Tcplp: SWS_TCPIP_00178		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	"UDP Test Configuration-2"		
Summary	UT instructs the IUT to create and bind an UDP socket to a multicast IP address that is mapped to <iutiface-0>. UT instructs IUT to send an UDP message. UT verifies that IUT has selected a unicast IP address that corresponds to the interface <iutiface-0> and also belongs to the TcplpLocalAddr container as the source IP address of the UDP message</iutiface-0></iutiface-0>		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0>. And EthIf controller <iutiface-0> must not have any other unicast IP address mapped to it. Assign multicast address <allsystemmcastaddr> to EthIf controller <iutiface-0></iutiface-0></allsystemmcastaddr></iutiface-0></iutiface-0></iutiface-0-ipaddr>		
Main Test Execu	ution		
Test Steps			Pass Criteria
Step 1	UT causes the IUT to <create <unusedue="" a="" on="" port="" port1="" socket="" udp=""> to multicast address <allsystemmcastaddr> for EthIf o <iutiface-0></iutiface-0></allsystemmcastaddr></create>	P-IUT-	
Step 2	 [UT] UT instructs the IUT to <send containing:<="" document="" li="" of="" the=""> Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is <host-1-ip></host-1-ip> </send>		Pocument ID 683 : AUTOSAR ATS LID

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Step 3	[LT]	The UDP message from the IUT shall contain:		
	Verify that the received UDP message from IUT contains	Source IP address := < IUTIface-0- IPAddr >		
	 Source IP address is set to < IUTIface-0-IPAddr > 			
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test. Restore the default address assignment to <iutiface-0></iutiface-0></close>			

4.7.2 [ATS_UDP_00484] Source address selection when "Broadcast IP address during Bind"

Test Objective	Source address selection when "Broadcast IP address during Bind"				
ID	ATS_UDP_00484	AUTOSAR Releases	4.2.1 4.2.2		
Affected Modules	TcpIP, EthIf, Eth	State	reviewed		
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124				
Trace to SWS Item	Tcplp: SWS_TCPIP_00179				
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1				
Configuration Parameters	"UDP Test Configuration-2"				
Summary	UT instructs the IUT to create and bind an UDP socket to a broadcast IP address that is mapped to <iutiface-0>. UT instructs IUT to send an UDP message. UT verifies that IUT has selected a unicast IP address that corresponds to the interface <iutiface-0>, and also belongs to the TcplpLocalAddr container, as the source IP address of the UDP message.</iutiface-0></iutiface-0>				
Needed Adaptation to other Releases	None				
	Assign unicast address <iutiface-0-ipaddr> for EthIf controller <iutiface-0>. And EthIf controller <iutiface-0> must not have any other unicast IP address mapped to it. Assign broadcast address <broadcastaddr-0> for EthIf controller <iutiface-0></iutiface-0></broadcastaddr-0></iutiface-0></iutiface-0></iutiface-0-ipaddr>				
Main Test Execution					
Test Steps			Pass Criteria		
Step 1	UT causes the IUT to <create <unusedui="" a="" and="" on="" port="" port1="" socket="" udp=""> to broadcast address <broadcastaddr-0> for EthIf cont</broadcastaddr-0></create>	P-IUT-			
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	<iutiface-0></iutiface-0>				
Step 2	[UT]	•			
	UT instructs the IUT to <send data=""> containing:</send>				
	 Destination-port is set to <unusedudp-lt-port></unusedudp-lt-port> Destination IP address is set to <host-1-ip></host-1-ip> 				
Step 3	[LT]	The UDP message from the IUT shall contain:			
	Verify that the received UDP message from IUT contains	Source IP address := <iutiface-0- IPAddr></iutiface-0- 			
	Source IP address is set to <iutiface-0-ipaddr></iutiface-0-ipaddr>				
Post- conditions	UT issues <close socket=""> to IUT to close all UDP sockets created during this test.</close>				
	2) Restore the default address assignment to <iutiface-0></iutiface-0>				



5 Appendix – A :: Traceability Matrix

The AUTOSAR SWS for TCP/IP contain some requirements which are not granular enough for testing. There are few requirements which references to some IETF RFC (or sections of IETF RFCs) where multiple test cases need to be derived.

In other ATS documents, the test cases reference to the specific items from AUTOSAR SWS documents, but for the Ethernet related scenario this would blow up into many test cases referencing the same AUTOSAR specification item (i.e. "Trace to SWS Item").

For this purpose, this ATS document proposes an identification of specification statement from the IETF RFCs so that they can be referenced in the test cases.

Below mentioned table gives a consolidated picture about each test cases, their origination point (i.e. reference at relevant RFC's section, page etc), their purpose and it also provides a 'classifier' that depicts the importance of the feature. All the testable statements that falls under mandatory category with respect to the reference RFC sections has been taken in here.

Please refer to Appendix-C which summarizes the coverage on 'Acceptance filter cases' during UDP datagram receive scenarios.

Below table is organized with the following columns

- Statement ID
 - Is a unique identifier.
 - For example: ATS_SID_10000, ATS_SID_10001
- 2. Related AUTOSAR specification item
 - o Single AUTOSAR SWS requirement which requires the statement
- 3. Reference in IETF RFC
 - provides the location of the statement
 - o It is constructed with a comma separated list of:
 - IETF RFC number,
 - Page number,
 - section number (if exists)
 - section name,
 - For example: RFC 1122, Page 77, Section 4.1.3.1, 'Ports'.

4. Content

 The statement copy pasted from corresponding IETF RFC or from AUTOSAR SWS document. The test method is derived to verify this 'statement'.

5. Classifier

- It is used to signify the requirement category in the specification. There are five different types of classifiers:
 - MUST: This classifier means that the relevant statement is an absolute requirement of the specification. Usually corresponding statements consists words like "must", "shall", "required".
 - MUST NOT: This classifier means that the relevant statement is an absolute prohibition of the specification. Usually corresponding statements consists words like "must not", "shall not".
 - SHOULD: This classifier means that for the relevant statement there may
 exist valid reasons in particular circumstances to ignore a particular item, but
 the full implications must be understood and carefully weighed before

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choosing a different course. Usually corresponding statements consists words like "should", "would", "recommended", "suggested".

- SHOULD NOT: This classifier means that for the relevant statement there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications must be understood and carefully weighed before choosing a different course. Usually corresponding statements consists words like "should not", "not recommended".
- MAY: This classifier signifies that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.). Usually corresponding statements consists words like "may", "optional".

SI. No.	Statement ID	AUTOSAR SWS #	Reference in IETF RFC	(Contont	
1	ATS_SID_10001	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2		
2	ATS_SID_10002	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having 'length' field set to zero MUST be discarded.	MUST
3	ATS_SID_10003	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value greater than the actual datagram length MUST be discarded.	MUST
4	ATS_SID_10004	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value less than the actual datagram length MUST be discarded.	MUST
5	ATS_SID_10005	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value set to MAX-LENGTH (65535) MUST be accepted.	MUST
6	ATS_SID_10006	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	UDP header with Source Port value set to zero should be accepted	SHOULD
7	ATS_SID_10007	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.6, 'Invalid Addresses', Page 79	UDP header with Source IP address value set to multicast-address must be rejected	MUST
8	ATS_SID_10008	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.6, 'Invalid Addresses', Page 79	UDP header with Source IP address value set to broadcast- address must be rejected	MUST
9	ATS_SID_10009	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.1, 'Ports', Page 77 If a datagram arrives addressed a UDP port for which there is no pending LISTEN call, UDP SHOULD send an ICMP Destination Port Unreachable message.		SHOULD



10	ATS_SID_10010	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2 Destination Port has a meaning within the context of a particular internet destination address.		MUST
11	ATS_SID_10011	SWS_TCPIP_00060	RFC 768, 'Fields', Page 1	Source Port is an optional field, when meaningful, it indicates the port of the sending process, and may be assumed to be the port to which a reply should be addressed in the absence of any other information.	MUST
13	ATS_SID_10013	SWS_TCPIP_00060	RFC 768, 'Fields', Page 1	Destination Port has a meaning within the context of a particular internet destination address.	MUST
14	ATS_SID_10014	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	RFC 768, 'Fields', Length is the length in octets of	
15	ATS_SID_10015	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	Length is the length in octets of this user datagram including this header and the data. (This means the minimum value of the length is eight.)	MUST
16	ATS_SID_10016	SWS_TCPIP_00060	Checksum is the 16-bit one's complement of the one's complement sum of a pseudo header of information from the IP header, the UDP header, and the data, padded with zero octets at the end (if necessary) to make a multiple of two octets.		MUST
18	ATS_SID_10018	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.4, 'UDP Checksums', Page 78	If a UDP datagram is received with a checksum that is non-zero and invalid, UDP MUST silently discard the datagram.	MUST
19	ATS_SID_10019	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	An all zero transmitted checksum value means that the transmitter generated no checksum (for debugging or for higher level protocols that don't care).	MUST

Table 4 Traceability matrix



6 Appendix – B :: Test Matrix

SI. No	Statement ID	Content	Special Configuration dependency
1	ATS_SID_10005	A UDP datagram having length value set to MAX-LENGTH (65535) MUST be accepted.	Tcplp.TcplpGeneralTcplpBufferMem ory = 65,527

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7 Appendix – C :: UDP Acceptance Filter scenarios

The below table provides the list of UDP reception scenarios tested according to SWS_TCPIP_00170.

Accept --> IUT Accepts the Reception
Discard --> IUT Discards the Reception

	LT Sends with Destination IP address					
Upper Tester causes following actions at IUT	Matching Unicast IP	Mismatching Unicast IP	Multicast - Valid (IF match case)	Multicast - InValid (IF not match case)	Broadcast - Valid (IF match case)	Broadcast - InValid (IF not match case)
create and bind an UDP socket to ANY address of <iutiface-0></iutiface-0>	Accept	Discard	Accept	Discard	Accept	Discard
<create and="" bind=""> a UDP socket with doBind flag set to FALSE i.e. No IP addr bound to the socket</create>	Discard		Discard		Discard	
Create & Bind a socket with valid Broadcast Addr.	Discard		Discard		Accept	Discard
Create & Bind a socket with valid Unicast Addr.	Accept		Discard		Accept	Discard
Create & Bind a socket with valid Multicast Addr.	Discard		Accept		Accept	
Create & Bind a socket with Invalid Multicast Addr (IF- NotMatch case)			Discard		Discard	
Create & Bind a socket to TCPIP_LOCALADDRID_ANY for any Ethlf controllers of IUT.	Accept		Accept		Accept	

 Legends
 Covered in current ATS
 Planned to cover in future
 No plan to cover as of now.