TEST PLAN

Revision 1.7

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Team C

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Revision History

Date	Revision	Description
4/20/2014	1.0	Initial document
04/22/2014	1.1	Re-numbered test cases to separate error handling tests into separate cases.
04/22/2014	1.2	Added test cases to cover all requirements.
4/25/2014	1.3	Added packet templates (sections 3 and 4).
5/6/2014	1.4	Updated section 3 to show plain-language packet data.
5/7/2014	1.5	Added test cases for invalid Gateway MAC. Added test case for invalid network interface selected. Updated sections 3 & 4 to show plain-language packet data. Reassigned requirements to test cases.
5/8/2014	1.6	Altered the introduction and table numbering and formatting
5/10/2014	1.7	Conducted tests

1. Introduction

This test plan represents the possible ways to implement the various scenarios of the event-trace diagrams from the Team C Project Design document. Each event-trace diagram has a corresponding test plan listed in section 2, Table 1. Section 3 & 4 include templates for the packets generated, transmitted and received by RdosTester.

2. Test Plan

Table 1. RdosTester Test Plan.

Test Case Number	Requirement Number	Test Description	Expected Result	Actual Result	Pass/Fail
1	3	Start RdosTester.	The application's GUI is displayed. The GUI displays text fields where the user can enter a source IP address, destination IP address, port number and Gateway MAC. The destination IP and port fields are not focusable. A combo box for network interface selection and a transmit button are also available.	The application's GUI was displayed. The GUI displayed text fields where the user can enter a source IP address, destination IP address, port number and Gateway MAC. The destination IP and port fields were not focusable. A combo box for network interface selection and a transmit button were also available.	Pass
2	3	Start RdosTester with no network available on the host machine.	The status bar displays a message stating, "No enabled network devices found. Enable one and restart." The	The status bar displayed a message stating, "No enabled network devices found. Enable one and restart."	Pass

			transmit button is disabled.	The transmit button was disabled.	
3	3, 5, 7, 9	A) Start RdosTester. B) Enter an invalid source IP address (300.1.1.1). C) Enter a valid MAC (ff.ff.ff.ff.ff.ff). D) Select the first network interface available in the combo box. E) Click Transmit.	The status bar displays a message stating, “Please enter a valid Source IP Address“.	The status bar displayed a message stating, “Please enter a valid Source IP Address“.	Pass
4	3, 5, 6, 7, 8, 9	A) Compile RdosTester with the ALLOWANYSERVER constant set to true. B) Start RdosTester. C) Enter a valid source IP address (169.254.254.1). D) Enter an invalid port number (-100). E) Enter the Gateway MAC of your router. F) Select the first network interface available in the combo box. G) Click Transmit	The status bar displays a message stating, "Please enter a port number between 0 and 65535".	The status bar displayed a message stating, "Please enter a port number between 0 and 65535".	Pass
5	3, 5, 6, 7, 8, 9	A) Compile RdosTester with the ALLOWANYSERVER	The status bar displays a message stating, "Please	The status bar displayed a message stating,	Pass

		constant set to true. B) Start RdosTester. C) Enter a valid source IP address (169.254.254.1). D) Enter an invalid port number (70000). E) Enter the Gateway MAC of your router. F) Select the first network interface available in the combo box. G) Click Transmit.	enter a port number between 0 and 65535".	"Please enter a port number between 0 and 65535".	
6	3, 5, 6, 7, 8, 9	A) Compile RdosTester with the ALLOWANYSERVER constant set to true. B) Start RdosTester. C) Enter a valid source IP address (169.254.254.1). D) Enter an invalid destination IP address (300.1.1.1). E) Enter the Gateway MAC of your router. F) Select the first network interface available in the combo box. G) Click Transmit.	The status bar displays a message stating, "Please enter a valid Destination IP Address".	The status bar displayed, “Please enter a valid Destination IP Address”	Pass
7	3, 5, 7, 9	A) Start RdosTester. B) Enter a valid IP	The status bar displays a message	The status bar displayed,	Pass

		address (192.168.100.1). C) Enter hex into the first 3 fields of Gateway MAC (ff.ff.ff). D) Select the first network interface available in the combo box. E) Click Transmit.	stating, “Please enter a complete MAC address“.	“Please enter a complete MAC address”	
8	3, 5, 7, 9	A) Start RdosTester. B) Enter a valid IP address (192.168.100.1). C) Enter a MAC including non-hex values (ff.ff.ff.dr.jl.bn). D) Select the first network interface available in the combo box. E) Click Transmit.	The status bar displays a message stating, “Please enter a hexadecimal MAC address“.	The status bar displayed, “Please enter a hexadecimal MAC address”	Pass
9	3, 5, 7, 9, 10, 11, 12	A) Start RdosTester. B) Enter the source address, 192.168.100.63. C) Enter the gateway MAC (00:16:b6:80:f0:04) D) Select a valid network interface. E) Click “transmit” in the GUI. F) Manually compare the console output to the Transmit Packet	The Console output should match the Transmit Packet Template, except where otherwise indicated in section 3.	The console output matched the template in the designated areas.	Pass

		Template in section 3.			
10	3, 5, 7, 9, 10, 11, 12, 14	A) Compile RdosTester with the ALLOWANYSERVER constant set to true. B) Start RdosTester. C) Start the Wireshark network protocol analyzer on the machine hosting the test OpenArena server. D) Determine the internet address of the machine on which RdosTester is running. E) Enter the address determined in step D, as the source address. F) Enter the destination address, 93.109.27.102, and port, 27960. G) Enter the Gateway MAC of your local router H) Select a valid network interface from the combo box. I) Click “transmit” in the GUI. J) Manually compare the Wireshark output (for traffic matching the source address) to the Transmit Packet Template in section 3.	The Wireshark output should match the Transmit Packet Template, with differences only in the source address, source MAC and IP header checksums. The source address in the template should match the source address entered in step E.	The wireshark output matched the template in the designated areas.	Pass

11	3, 5, 6, 7, 8, 9, 10, 11, 12, 14	A) Compile RdosTester with the ALLOWANYSERVER constant set to true. B) Start RdosTester. C) Determine the internet address of the machine on which RdosTester is running. D) Enter the address determined in step C, as the source address. E) Enter the Gateway MAC of your local router F) Select a valid network interface from the combo box. G) Transmit a packet to a valid destination address (46.21.52.57) and port (80), with no Open Arena server available to respond.	The status bar displays a message stating, “Packet Transmitted. No Response from Server“.	The status bar displayed a message stating, “Packet Transmitted. No Response from Server“, as expected.	Pass
12	3, 5, 7, 9, 10, 11, 12, 14	A) Start RdosTester. B) Enter 46.21.52.57 (valid address but incorrect for machine running RdosTester) as the source address. C) Enter the Gateway MAC of your local router D) Select a valid network interface from the combo box.	The status bar displays a message stating, “Packet Transmitted. No Response from Server“.	The status bar displayed a message stating, “Packet Transmitted. No Response from Server“, as expected.	Pass

		E) Click Transmit.			
13	3, 5, 7, 9	A) Start RdosTester. B) Enter the source address, 192.168.100.63. C) Enter the gateway MAC (00:16:b6:80:f0:04) D) Select an invalid network interface. E) Click “transmit” in the GUI.	The status bar displays a message stating, “Packet not Transmitted. Try a different Network Interface“.	The status bar displayed a message stating, “Packet not Transmitted. Try a different Network Interface“, as expected.	Pass
14	3, 5, 7, 9, 10, 11, 12, 14, 15	A) Start RdosTester. B) Determine the internet address of the machine on which RdosTester is running. C) Enter the address determined in step B as the source address. D) Enter the Gateway MAC of your local router E) Select a valid network interface from the combo box. F) Click the transmit button.	The Console output should match the Receive Packet Template, except where otherwise indicated in section 4.	Checked the last instance of data output on the console against the template. The source IP address in the console output matched the destination IP address in the application (5.101.146.67). The destination IP address in the console matched the source IP address in the application (192.168.1.103). The first and last lines of the data block matched exactly.	Pass
15	3, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16,	A) Start RdosTester. B) Determine the internet address of the	The status bar displays a message stating, “Received Packet/Original	The captured length for the first set listed in the console was	Pass

	17, 18	machine on which RdosTester is running. C) Enter the address determined in step B as the source address. D) Enter the Gateway MAC of your local router E) Select a valid network interface from the combo box. F) Click the transmit button. G) Record the packet size listed in the console for the transmitted (first in the list) packet. This is the "captured length" variable. Subtract 14 from this number. H) Record the packet size listed in the console for the received (last in the list) packet. This is the "captured length" variable. Subtract 14 from this number. I) Manually calculate the ratio between the size of the received packet and the transmitted packet. (received/transmitted*100). J) Compare the ratio to the ratio displayed in the GUI.	Packet Ratio is: ", followed by the ratio of the packet sizes. The manually calculated ratio should match the ratio displayed in the GUI.	60 bytes. The captured length for the last set listed in the console was 212 bytes. Subtracted 14 from both and divided. 198/46 is approximately 4.30. Multiplied that by 100 to get the ratio. The result was about 430.43 which matches the application output of 430%.	

16	3	Shutdown the application by clicking the “X” at the top right hand corner of the GUI.	The application terminates.	The application terminates.	Pass

3. Transmit Packet Template

The console output data should be compared to the template below. If there is more than one instance of similar data output to the console, compare only the first data-set to this template. The only differences between the console output and this template should be the frame number (green), the time-stamp (red), the source MAC (blue), and the checksums (yellow). The checksums may differ between the console output and the template, but be labeled "correct".

```
Frame:
Frame:           number = 1
Frame:        timestamp = 2014-05-07 05:25:06.84
Frame:     wire length = 60 bytes
Frame: captured length = 60 bytes
Frame:
Eth:  ******* Ethernet - "Ethernet" - offset=0 (0x0) length=14
Eth:
Eth:      destination = 00:16:b6:80:f0:04
Eth:                    .... ..0. .... .... = [0] LG bit
Eth:                    .... ...0 .... .... = [0] IG bit
Eth:           source = f0:de:f1:e4:8e:75
Eth:                    .... ..0. .... .... = [0] LG bit
Eth:                    .... ...0 .... .... = [0] IG bit
Eth:             type = 0x800 (2048) [ip version 4]
Eth:
Ip:  ******* Ip4 - "ip version 4" - offset=14 (0xE) length=20 protocol
suite=NETWORK
Ip:
Ip:          version = 4
Ip:             hlen = 5 [5 * 4 = 20 bytes, No Ip Options]
Ip:         diffserv = 0x0 (0)
Ip:                    0000 00.. = [0] code point: not set
Ip:                    .... ..0. = [0] ECN bit: not set
Ip:                    .... ...0 = [0] ECE bit: not set
Ip:           length = 43
Ip:               id = 0x7C50 (31824)
Ip:            flags = 0x0 (0)
```

```
Ip:                    0.. = [0] reserved
Ip:                    .0. = [0] DF: do not fragment: not set
Ip:                    ..0 = [0] MF: more fragments: not set
Ip:            offset = 0
Ip:               ttl = 128 [time to live]
Ip:              type = 17 [next: User Datagram]
Ip:          checksum = 0x1E2 (482) [correct]
Ip:            source = 192.168.100.63
Ip:       destination = 5.101.146.67
Ip:
Udp:  ******* Udp offset=34 (0x22) length=8
Udp:
Udp:            source = 27960
Udp:       destination = 27960
Udp:            length = 23
Udp:          checksum = 0xBEF0 (48880) [correct]
Udp:
Data:  ******* Payload offset=42 (0x2A) length=15
Data:
002a: ff ff ff ff  67 65 74 69  6e 66 6f 20  78 78 78       ....getinfo xxx
```

4. Receive Packet Template

The console output data should be compared to the template below. If there is more than one instance of similar data output to the console, compare only the last data-set to this template. There will be a few differences between the template and the console output. The areas that must be checked are the source IP address (blue), the destination IP address (red), and the first and last lines of the data block, highlighted in yellow. The source address should match the destination address entered into RdosTester. Conversely, the destination address in the console output should match the source address in the RdosTester GUI. The yellow lines in the template should match the console output exactly.

```
Frame:
Frame:           number = 3
Frame:        timestamp = 2014-05-07 23:25:42.52
Frame:     wire length = 213 bytes
Frame: captured length = 213 bytes
```

```
Frame:

Eth:  ******* Ethernet - "Ethernet" - offset=0 (0x0) length=14

Eth:

Eth:      destination = 74:d0:2b:35:a3:c4

Eth:                    .... ..0. .... .... = [0] LG bit

Eth:                    .... ...0 .... .... = [2] IG bit

Eth:           source = d4:ca:6d:cc:dd:51

Eth:                    .... ..0. .... .... = [0] LG bit

Eth:                    .... ...0 .... .... = [2] IG bit

Eth:             type = 0x800 (2048) [ip version 4]

Eth:

Ip:  ******* Ip4 - "ip version 4" - offset=14 (0xE) length=20 protocol
suite=NETWORK

Ip:

Ip:          version = 4

Ip:             hlen = 5 [5 * 4 = 20 bytes, No Ip Options]

Ip:         diffserv = 0x0 (0)

Ip:                    0000 00.. = [0] code point: not set

Ip:                    .... ..0. = [0] ECN bit: not set

Ip:                    .... ...0 = [0] ECE bit: not set

Ip:           length = 199

Ip:               id = 0x39A0 (14752)

Ip:            flags = 0x2 (2)

Ip:                    0.. = [0] reserved

Ip:                    .1. = [1] DF: do not fragment: set

Ip:                    ..0 = [0] MF: more fragments: not set

Ip:           offset = 0

Ip:              ttl = 118 [time to live]

Ip:             type = 17 [next: User Datagram]

Ip:         checksum = 0x1A1F (6687) [correct]

Ip:           source = 5.101.146.67
```

```
Ip:      destination = 192.168.88.22
Ip:
Udp:  ******* Udp offset=34 (0x22) length=8
Udp:
Udp:           source = 27960
Udp:      destination = 27960
Udp:           length = 179
Udp:         checksum = 0xE364 (58212) [correct]
Udp:
Data:  ******* Payload offset=42 (0x2A) length=171
Data:
002a: ff ff ff ff  69 6e 66 6f  52 65 73 70  6f 6e 73 65    ....infoResponse
003a: 0a 5c 6d 61  78 50 69 6e  67 5c 34 30  30 5c 76 6f    .\maxPing\400\vo
004a: 69 70 5c 31  5c 67 5f 68  75 6d 61 6e  70 6c 61 79    ip\1\g_humanplay
005a: 65 72 73 5c  30 5c 67 5f  6e 65 65 64  70 61 73 73    ers\0\g_needpass
006a: 5c 30 5c 70  75 72 65 5c  31 5c 67 61  6d 65 74 79    \0\pure\1\gamety
007a: 70 65 5c 30  5c 73 76 5f  6d 61 78 63  6c 69 65 6e    pe\0\sv_maxclien
008a: 74 73 5c 38  5c 63 6c 69  65 6e 74 73  5c 34 5c 6d    ts\8\clients\4\m
009a: 61 70 6e 61  6d 65 5c 6f  61 5f 64 6d  33 5c 68 6f    apname\oa_dm3\ho
00aa: 73 74 6e 61  6d 65 5c 4f  41 5f 54 65  73 74 42 65    stname\OA_TestBe
00ba: 64 5c 70 72  6f 74 6f 63  6f 6c 5c 37  31 5c 63 68    d\protocol\71\ch
00ca: 61 6c 6c 65  6e 67 65 5c  78 78 78                   allenge\xxx
```