

Client/Server Failure Test Report (v1.0)

Report date: 1/29/18

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Test equipment number: #123456

1. Introduction

1.1 Document Overview

This document is the failure test report for the client/server communication system. This document contains the test plans, and also the results all of the tests.

1.2 Definitions and Abbreviations

HIPPA: Health Insurance Portability and Accountability of 1996.

2. Test Plans

The test plans test the 4 possible failing scenarios of the server/client system. The test plans are developed based on the following assumptions:

- Client and server are both powered up and connected to a stable network, with IP and domain names set up accurately.
- Client and server both have checksum functions for both incoming request and response signals, for validated communication.
- Client can only send a new request when the previous communication session is completed. (To prevent client receiving and processing out of date response)
- Client check timestamp for server response, will only receive and process server response during current communication session.
- Server can only receive and process requests from authenticated, updated clients to prevent invalid or malicious communications.
- Clients can only receive and process respond to authenticated and updated servers, to prevent invalid or malicious input communications.
- Client and server each generates a log file for each communication session, keeping track of each successfully sent/received request/response. Will also log terminate message upon client/server termination.
- Client and server must both be HIPAA-compliant.

2.1 Firewall Checking

| Step no. | Test Procedures | Expected Result |
|----------|--|--|
| 1 | Check network connections. | Connections established successfully. |
| 2 | Find the port range of server (eg. 1234 - 1238). | |
| 3 | Execute “netstat -a -n” on terminal and look for a “:1234” to “:1238” listener. | |
| 4 | If port 1234 listener is not displayed, or feel that the firewall may be blocking them, start the windows firewall logging and and check logs for dropped connections: “Control Panel->Windows Firewall->Advanced Settings->click on ”Settings” button -> select “Log dropped packets”-> “Look at the log file location”. | The server port is not present on the firewall log file. |

2.2 Client not receiving server response

| Step no. | Test Procedures | Expected Result |
|----------|--|---|
| 1 | Check network connections. | Connections established successfully. |
| 2 | Open and read client log file. Should see existing log entries for sent client requests and received server response. | Check client log for sent requests, received responses, and client termination message. |
| 3 | Open and read server log file. Should see existing log entries for sent client requests and received server response. | Check server log for sent requests, received responses, and client termination message. |

The results of server and client log files with possible explanations for the issue are shown below:

| Client Log | Server Log | Possible test result |
|---|---|--|
| No client sent request, no received server response. | No sent server response, no received request. | Connections not established successfully. |
| Exist client sent request, no received server response. | No sent server response, no received request. | Sent client request lost; connections not established successfully, or client terminated before receiving response. |
| Exist client sent request, no received server response. | No sent server response, exist client request. | Server did not or was unable to send response. |
| Exist client sent request, no received server response. | Exist sent server response, exist client request. | Sent server response lost; connections not established successfully, or client terminated before receiving response. |

2.3 All ports occupied

| Step no. | Test Procedures | Expected Result |
|----------|---|---|
| 1 | Check network connections. | Connections established successfully. |
| 2 | Check if server ports are allowed on firewall. | Server port is allowed on the firewall. |
| 3 | Client sends request to server. | |
| 4 | If server refuses connection, repeat step 3 for all the allowed server ports. | |

3. Test Result

A possible scenario is emulated with the following failures to generate the test results:

- Client firewall blocked server port.
- Client not receiving server response, due to a network disconnection on the server side when server is sending response to client.
- Server did not reach client connection capacity.

This section provides details of each test results with the provided test plans, identifies the failure and some tests provides corresponding explanation for various test results.

3.1 Firewall Checking

| Step no. | Test Procedures | Expected Result | Pass/Fail | Notes |
|----------|--|--|-----------|-------|
| 1 | Check network connections. | Connections established successfully. | Pass | NA |
| 2 | Find the port range of server (eg. 1234 - 1238). | | Pass | NA |
| 3 | Execute “netstat -a -n” on terminal and look for a “:1234” to “:1238” listener. | | Fail | NA |
| 4 | If port 1234 listener is not displayed, or feel that the firewall may be blocking them, start the windows firewall logging and check logs for dropped connections: “Control Panel->Windows Firewall->Advanced Settings->click on” Settings” button -> select “Log dropped packets”-> “Look at the log file location”. | The server port is not present on the firewall log file. | Pass | NA |

3.2 Client receiving server response

| Step no. | Test Procedures | Expected Result | Pass/Fail | Notes |
|----------|---|---|-----------|---|
| 1 | Check network connections. | Connections established successfully. | Pass | NA |
| 2 | Open and read client log file. Should see existing log entries for sent client requests and received server response. | Check client log for sent requests, received responses, and client termination message. | Fail | Exist sent client request, no server response. |
| 3 | Open and read server log file. Should see existing log entries for sent client requests and received server response. | Check server log for sent requests, received responses, and client termination message. | Fail | Exist received client request, no sent server response. |

| Client Log | Server Log | Possible test result |
|---|---|---|
| No client sent request, no received server response. | No sent server response, no received request. | Connections not established successfully. |
| Exist client sent request, no received server response. | No sent server response, no received request. | Sent client request lost; connections not established successfully, or client terminated before receiving response. |
| Exist client sent request, no received server response. | No sent server response, exist client request. | Server did not or was unable to send response. |
| Exist client sent request, no received server response. | Exist sent server response, exist client request. | Sent server response lost; connections not established successfully, or client terminated before re or client terminated before receiving response. |

3.3 All ports occupied

| Step no. | Test Procedures | Expected Result | Pass/Fail | Notes |
|----------|---|---|-----------|-------|
| 1 | Check network connections. | Connections established successfully. | Pass | NA |
| 2 | Check if server ports are allowed on firewall. | Server port is allowed on the firewall. | Pass | NA |
| 3 | Client sends request to server. | | Pass | NA |
| 4 | If server refuses connection, repeat step 3 for all the other allowed server ports. | | Pass | NA |

4. Test Result Summary

The emulated client/server system did not pass two of the three failure tests; therefore, the final conclusion of the client/server system are as follow:

- Server's ports are not whitelisted on client's firewall.
- Client is not receiving response from server due to a termination/disconnection on server which caused the server to not send response successfully.
- Not all of the server's ports are occupied.

5. Signatures of tester and approval:

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|-------------------------|------------|------------------------------|-----------|
| Signature of Tester: | Amanda Zhu | Date of tester signature: | 1/29/2018 |
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| Approval Signature: | | Date of approval signature: | |
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