

Term Project

CSE 4481 4.0 Computer Security Lab, Winter 2014

Format: Individual

Project Overview

The goal of the project is to develop a secure help-desk application that allows secure communication over a public network. The application will be used by non-technical persons for online support. Therefore, the application must be resilient to security attacks, as well as user-friendly. This help-desk application will have a client-server architecture whose conceptual diagram is shown on Figure 1.

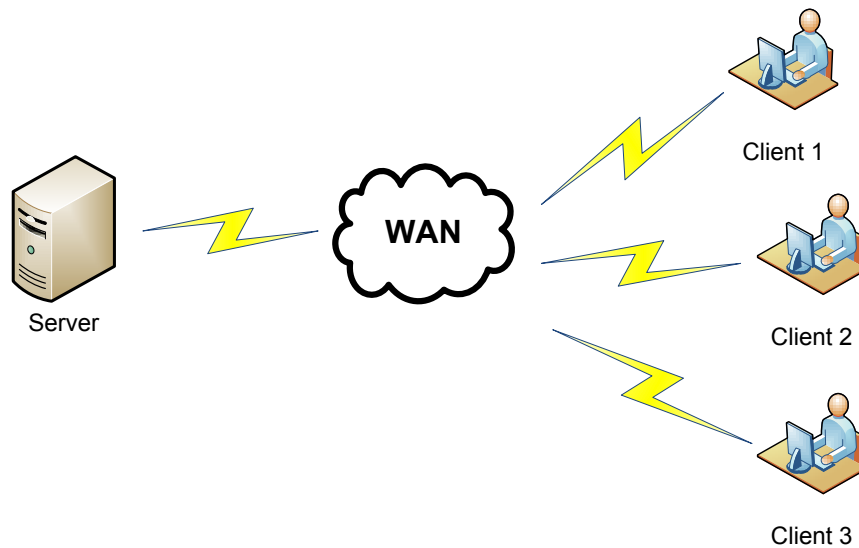


Figure 1: Help-desk application conceptual diagram

Functional Requirements

The help-desk application has the functional requirements shown in Table 1.

ID	Requirements
REQ_1	Users
REQ_1.1	The application shall support two types of users: anonymous users and help-desk users
REQ_2	User Authentication
REQ_2.1	The application shall be able to authenticate help-desk users
REQ_3	Automatic selection of help-desk user
REQ_3.1	The help-desk system shall be able to assign for each anonymous user an online help-desk user
REQ_4	Anonymous users
REQ_4.1	Anonymous users shall be capable to send text messages to their assigned online help-desk users
REQ_4	Help-desk users
REQ_4.1	Help-desk users shall be capable to send text messages to a selected one of their anonymous users
REQ_4.2	A help-desk user shall be capable to send a message to another help-desk user
REQ_4.3	Help-desk user shall be capable to transfer non-authenticated user to another help-desk user
REQ_4.4	The application shall be able to display the help-desk sender and the help-desk recipient for each message between help-desk users
REQ_5	Network Communication
REQ_5.1	The client communicates with the server using the TCP protocol
REQ_5.2	The server shall bind one TCP port
REQ_5.3	The server TCP port shall be configurable by the user
REQ_5	Server
REQ_5.1	The server shall be able to support at least 512 simultaneous users
REQ_6	Client
REQ_6.1	The client shall be able to connect to the server using the DNS server name and server port number
REQ_7	GUI
REQ_7.1	The application GUI shall be simple and user friendly
REQ_7.2	The application GUI shall be able to automatically display a list of all logged-on help-desk users after help-desk user authenticated
REQ_8	The application shall be secure

Table 1: Functional Requirements.

Deliverables

The project will be implemented in four phases with the following due dates and deliverables:

Phase 1: Functional application

Due date: February 2, 2014 at 11:59pm

Deliverable: For this phase, you must deliver a fully functional application, i.e. one that fulfills all requirements except REQ.8. You must also provide a report that includes:

- The server and client software design. Your report must include your rationale for the design choices you made.
- The GUI design of your application (includes rationale as above).
- A testing report.

It is expected that your application design will be carefully thought out. An application with inadequate design will be significantly penalized.

Phase 2: Security report

Due date: February 27, 2014 at 11:59pm

Deliverable: For this phase, you must deliver a report that includes:

1. The application threat model you created
2. The security test cases (attacks) that were performed (setup, attack code, analysis of collected data, screen shot of collected data)
3. The security test cases that were designed (setup, test case code) but not executed
4. The security design flaws you found
5. The security bugs you found

Phase 3: Secure application

Due date: March 24, 2014 at 11:59pm

Deliverable: For this phase, you must deliver a version of the help-desk application that contains no known security bugs, i.e. all security issues you identified in Phase 2 have been resolved. You must include a README file explaining how to install your application if you believe this is necessary.

You must also submit a report that includes:

- The revised server and client software design. Your report must include your rationale for the design choices you made.
- The revised GUI design of your application (includes rationale as above).
- A revised testing report. It should include both functional and security tests.
- A report on other ways you could enhance the security of the system, e.g. firewalls, VPN etc.

Phase 4: Final delivery

Due date: April 4, 2014 at 11:59pm

Deliverable: For this phase, you must deliver the final version of the help-desk application including any fixes based on Phase 3 feedback. You must also submit a revised report based on Phase 3 feedback.

How to Submit

Before the deadline, submit electronically the report and/or the source code you created. Place all the files you want to submit in a directory called PhaseX, where X is appropriately 1, 2, 3, or 4.

To submit, navigate to the parent directory of PhaseX and give the following command

```
submit 4481 PhaseX PhaseX
```

Also, drop off a hard copy of the report (if applicable) into the CSE 4481 assignment dropoff box located on the first floor of CSEB. The hard copy will be the one to be marked. The electronic copy will be used for record keeping.