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Proyecto Seguridad informatica Auditoria aplicacion Uber

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1. Introducción

Desde los inicios de la red de la computacion, se quiso realizar un monitoreo de los paquetes que se envian dentro de una red, siendo una funcion de los Administradores de red de alguna empresa o establecimiento, para poder analizar los paquetes, donde puedan existir tipos de vulnerabilidades dentro de la red de la empresa. Se empezo a implementar seguridad en algunas empresas, para poder detectar y mitigar vulnerabilidades. Con el tiempo empezaron a aparecer empresas para prestar servicios de consultorias de seguridad. Pero lo que no se ha podido lograr a lo largo de la historia es poder mitigar completamente la vulnerabilidad de las redes, debido a que siempre existira un riesgo residual que se debera hacer cargo uno.

¿Que es el riesgo residual?

El riesgo residual se refiere al riesgo remanente luego de realizar un plan de seguridad que disminuyo el riesgo total de un proyecto o sistema. Este riesgo se apalanca mediante la aceptación del mismo o con terceros que asuman este riesgo, generalmente como un seguro. (Ejemplo: Entidades generadoras de certificados SSL).

En el presente proyecto se realizara una auditoria de una aplicacion mobile, donde se debera realizar una investigacion de sus tipos de vulnerabilidades que se encuentran dentro de sus codigos, para luego realizar ataques eticos para ver que tan vulnerables es esta.
Luego de haber documentado esta auditoria a la aplicación, se deberá reportar estos riesgos a la empresa que se le realizo la auditoria. Para que esta entidad pueda mitigar estos problemas de encontrados

2. Aplicacion escogida

La aplicacion escogida, es Uber, una de las empresas de transporte mas importante a nivel mundial. Esta empresa se origino en el año 2009 dos amigos Travis Kalanik y Garret M. Camp. Esta empresa cuenta con 6700 empleados, el rubro de esta empresa es el transporte privado.

Historia

Garret M. Camp, canadiense licenciado en ingeniería, se encontraba en La Ciudad de la Luz junto un amigo lejano, el californiano Travis Kalanik, para asistir a LeWeb, un congreso sobre los negocios del futuro y la innovación. Paradojas del destino, y esperando un taxi que no paraba o nunca llegaba, fue que a las puertas de este evento, unas cuantas maletas, mucha lluvia, y quizá, un poco de mal humor, a este par de amigos se les ocurrió la idea de uno de los negocios más revolucionarios de los últimos años. ¿Qué pasaría si con mi móvil pudiese llamar a un coche para que estuviese en el lugar adecuado en el momento adecuado? Con esta sencilla idea comenzó la verdadera tormenta en las cabezas de estos personajes.

Uber es una compañía norteamericana que está transformando la manera en que las personas se mueven en las ciudades. Conectándose a través de una aplicación, de manera simple, a conductores con usuarios que requieren un servicio de traslado.

Así, ayudan a que las ciudades sean más accesibles, al ofrecer más opciones para los usuarios y más oportunidades de generación de ingresos para socios conductores.

3. Objetivos

3.1. Objetivo general

1. Se debera realizar una auditoria de seguridad haciendo distintos tipos de ataques eticos a la aplicacion Uber, para detectar sus problemas y reportarlos.

3.2. Objetivos específicos

1. Estudiar la aplicacion escogida
2. Buscar puntos de vulnerabilidad
3. Estudiar metodos de ataques

4. Marco Teórico

A continuación se detallan una serie de términos técnicos necesarios para el total entendimiento del presente proyecto:

4.1. Wireshark

Es una herramienta multiplataforma con interfaz grafica para el analisis de red, producto de la evolucion de Ethereal. Incluye la herramienta Tshark en modo consola para capturas, analisis de red, entre otras posibilidades. Este permite ver, aun nivel bajo y detallado, consultar todo lo que esta ocurriendo en la red. Es open source y multiplataforma. Se utiliza a menudo como mejor opcion al momento de auditar redes usualmente redes Ethernet y es compatible con algunas otras. es un analizador de protocolos de red. Permite capturar paquetes de datos desde una red en vivo, o leer los paquetes desde un archivo de captura previamente guardado, o imprimir un formulario descifrado los paquetes o escribir los paquetes en un archivo.

4.2. GitHub

Es una plataforma de desarrollo colaborativo para alojar proyectos utilizando el sistema de control de versiones Git. Utilizando el framework Ruby on rails por GitHub. El codigo se almacena de forma publica, aunque existe la opcion de almacenarlo de forma privada, pero para esto se debe crear una cuenta de pago.

4.3. Git

Es un software de control de versiones que fue diseñado por Linus Torvalds, pensando en la eficiencia y la confiabilidad del mantenimiento de versiones de aplicaciones cuando estas tienen un gran numero de archivos de codigo fuente. Git es utilizado para realizar respaldos de copia de seguridad de las versiones de las aplicaciones, para no dañar el codigo fuente o por si se daña o se borra, se puede realizar una recuperacion del repositorio de Git.

4.4. MobSF

Mobile Security Framework es un marco automatizado de pen-testing capaz de realizar análisis estáticos y dinámicos, todo en uno, de aplicación móvil abierta (Android / iOS). Hemos estado dependiendo de múltiples herramientas para llevar a cabo la inversión, la decodificacion, la depuración, la revisión de código y la prueba de pluma y este proceso requiere mucho esfuerzo y tiempo. Mobile Security Framework puede utilizarse para un análisis de seguridad eficaz y rápido de las aplicaciones de Android e iOS. Soporta binarios (APK - IPA) y código fuente comprimido.

4.5. Apktool

Una herramienta para la ingeniería inversa de terceros, cerrado, aplicaciones binarias de Android. Puede descifrar los recursos de forma casi original y reconstruirlos después de hacer algunas modificaciones. También facilita el trabajo con una aplicación debido al proyecto como la estructura de archivos y la automatización de algunas tareas repetitivas como la construcción de apk, etc.

5. Licencias Aplicacion

Acknowledgements

This application makes use of the following third party libraries:

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Swift Youtube Player

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XMLDictionary version 1.4, April 16th, 2014

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leveldb-library

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Google Maps SDK for iOS

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6. Plan de accion

Que es un plan de accion?
Un plan de accion es una herramienta de planificacion de gestion y control de tareas en un proyecto. Este se basa en objetivos planteados que van a ir de manera incremental por cada entrega que se realiza. El plan de accion sirve para coordinar y comprender En el presente trabajo el plan de de accion a seguir van a ser variados metodos de accion a realizar, donde a la aplicacion se le realizara:

1. Modificar Codigo fuente de apps en smartphone
2. Simulacion de pago a Braintree
3. Ataque de DDoS
4. Inyeccion SQL a leveldb-library
5.

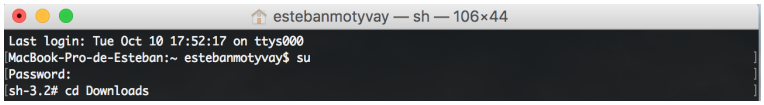
7. Desarrollo

7.1. Descompilacion

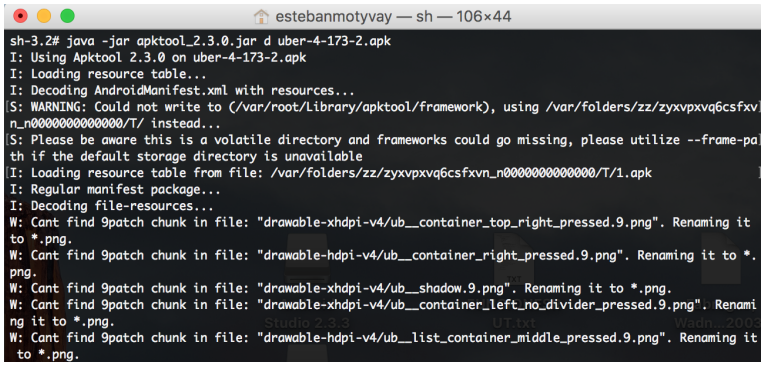
Para realizar la descompilacion de la APK de Uber, se debió realizar la instalación y actualización de algunos programas

1. Java SDK y JRE
2. Android SDK
3. Apktool
4. uber.apk

Luego de haber instalado todos los programas necesarios, se debe abrir la terminal, donde se debe iniciar el Super Usuario (su) y se debera ingresar la Pw correspondiente al super usuario. Luego se inicia todo el proceso de descompilacion de la Apps.

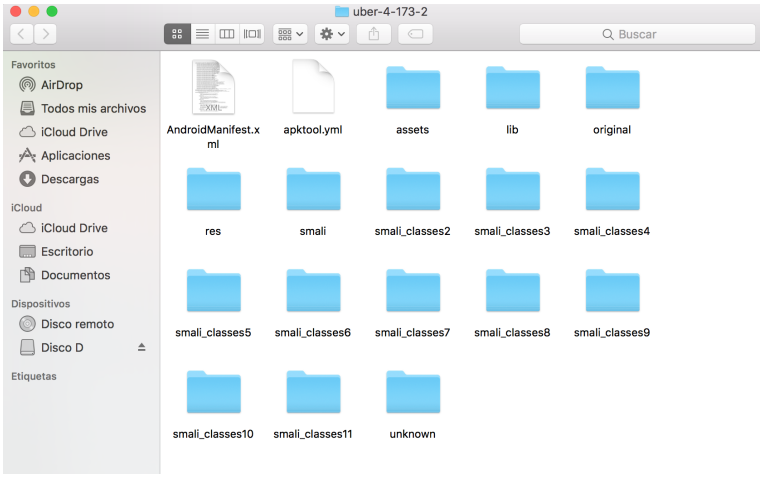


Luego de haber ejecutado el super usuario, se ejecuta la aplicacion Apktool.jar, este se busca por terminal y este se encuentra en descarga. Para poder ejecutarlo se ingresa el comando java -jar d nombredelaapk.apk. La d del comando significa descompilar.



Luego de descompilar la aplicación, este genera los archivos de la aplicacion donde se encontrara el .XML que sera donde estara el codigo de la aplicacion y otros archivos complementarios para la aplicacion. La aplicacion al descompilar genero los siguientes archivos:

Analisado los codigos java y el archivo XLM que fueron generados al realizar ingeniería inversa al Apk, no fue posible detectar a simple vista ciertas fallas. Se requirio ayuda de cirtas aplicaciones de analisis de codigos para detectar vulnerabilidades, detectando que las unicas vulnerabilidades que contenia la aplicacion, es mediante los



permisos que se requieren para instalar la aplicacion, como por ejemplo: Activar camara Permitir Ubicacion Actual Permitir escribir en SD etc.

Utilizando la aplicación Android Studio, se detecto que esta utilizaba el metodo de encriptacion de SHA1 y DSA

```
<!-- Signature Algorithms -->
<Algorithm URI="http://www.w3.org/2000/09/xmldsig#dsa-sha1"
           Description="Digital Signature Algorithm with SHA-1 message digest"
           AlgorithmClass="Signature"
           RequirementLevel="REQUIRED"
           JCEName="SHA1withDSA"/>
```

Uber al ser una aplicación tan grande y encontrarse ubicada en muchos países, esta cuenta con un nivel de seguridad muy alta en sus app y web. Como anteriormente Uber contó con unas vulnerabilidad, esta fue obligada por la comisión federal de comercio a tener una Auditoria de Seguridad permanente por 20 años.

Por ende, en este proyecto, no se basara en encontrar la vulnerabilidad y tratar de reventar esa vulnerabilidad, lo que se realizara sera tratar de realizar muchos métodos de ataque, y decir que tan segura es esta aplicación y porque.

Uber será auditada durante 20 años por violar privacidad de usuarios

La compañía fue acusada de utilizar un software para monitorear desplazamientos.

8. Entregables

Entregable	Fecha
Entregable 1	27/09/2017
Entregable 2	11/10/2017
Entregable 3	25/10/2017
Entregable 4	2/11/2017
Entregable 5	15/11/2017
Entregable Final	29/11/2017

Cuadro 1: Tabla de entregables.