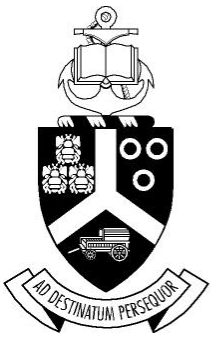


UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Department of Computer Science

COS 301 - Software Engineering

Amazon
Network Visualizer
Demo 3

Not-Like-This

Authors:	*Student number:*
Jedd Schneier	u13133064
Daniel King	u13307607
Muller Potgieter	u12003672

September 11, 2016

Contents

1 Vision

The Network Visualizer is intended to be used by registered Amazon Web Services (AWS) users. The visualizer is primarily aimed at consumers of AWS, in order to provide a simple and clear representation of the various networks' structures.

In order to access the visualizer, the user must first submit their AWS password and secret password. The visualizer then attempts to access the server, using the provided passwords. If this is successful, the visualizer will scan the specified network and log the nodes (such as instances and VPC's) and their relationships. It uses this information to construct a tree-esque representation of the network.

Using this representation, it is then translated into HTML. Making use of the vis.js library, the structure of the network is presented in a clear, visual hierarchial structure. The page also allows the user to specify which region they wish to be scanned and represented.

2 Scope

- The user requires a valid Amazon Web Services account (or access to one), in order to make use of the visualizer.
- The user requires an internet capable device and a modern browser to access the visualizer's page.

3 Architectural Requirements

3.1 Architecture Scope

3.2 Quality Requirements

3.2.1 Critical

3.2.2 Important

3.2.3 Nice To Have

3.3 Architectural Constraint

4 Architectural Design

5 Functional Requirements

This section specifies the functional specifications for the AWS Network Visualizer system. It defines the user-system interaction and relationship between users and the product. It will provide the expected functionality for all user cases as well as the activity processes for the system.

5.1 Description of AWS

Amazon web services provide a cloud based service for hosting a clients network. There is a lack of information regarding ones network, specifically the logical representation on the system for the client to make sense of their network. The network visualizer aims to improve clients understanding of their own network, how AWS works and possible insights in the managing of their network.

5.2 Required Functionality

The system must be able to:

1. Be accessible to registered, valid AWS customers.
2. Scan the networks located in different regions.
3. Provide an interactive hierarchical and visual representation of the networks.
4. Give additional information on the network statistics, construction, etc.
5. Provide a clear image of the clients' virtual networks.
6. Improve the AWS clients' experience.

5.3 Use case Prioritization

5.4 Use case/Service contracts

Use Case	Pre Condition	Post Condition	Description
Viewing the Hierarchy	The application must be connected to the server and able to read in network data. The server must be active and have acess to AWS.	The web page continuosly updates with the new data being loaded.	This use case forms the core of the project, as the primary purpose of the application is to visualise the structure of the virtual network.
Select a region	The application must be connected to the server and able to read in network data. The server must be active and have acess to AWS.	The previous region's visualisation is replaced by the selected region.	There are a number of AWS regions. For simplicity's sake, the visualiser only visualises one at a time, but allows for switching betweeen them.
Zooming in/out. Moving the hierarchy	The application must be connected to the server and able to read in network data. The server must be active and have acess to AWS.	The hierarchy's position or level of zoom is altered.	Since the visualised network may be large, the user can move it about and zoom in, for a better view.
Clicking a node.	The application must be connected to the server and able to read in network data. The server must be active and have acess to AWS.	The selected node is highlighted. Node related information is displayed below the hierarchy.	Each node in the network has a number of attributes that can provide valuable information. This way, the information can be displayed in a neat manner.
Hovering over a node.	The application must be connected to the server and able to read in network data. The server must be active and have acess to AWS.	Edges connecting nodes of different levels are rendered invisible. Edges connecting nodes on the same level are made vidible.	It is possible for nodes on the same level of the network to have relationships. They are normally hidden, in order to present a cleaner hierarchy.

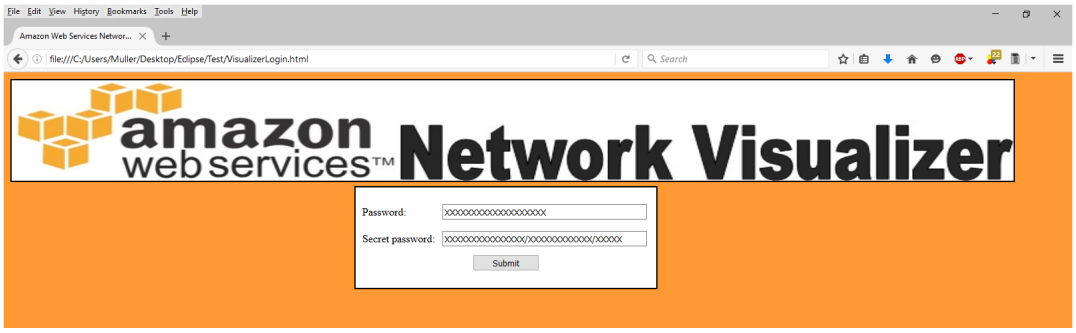
6 Specification Update

7 Using the system

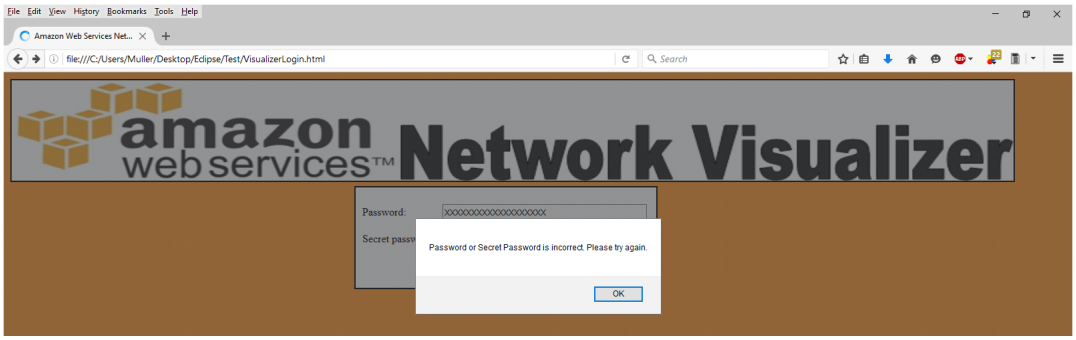
The functionality of the web page will be spread between the following use cases:

7.1 Login

This is the first web page of the visualizer. The user is presented with two fields: One for the user's normal AWS passoword and another for their secret AWS password. The user then enters the requested details and the server is queriedm to verify the user's identity. Only when the correct passords are supplied, will the user be able to continue to the visualizer.

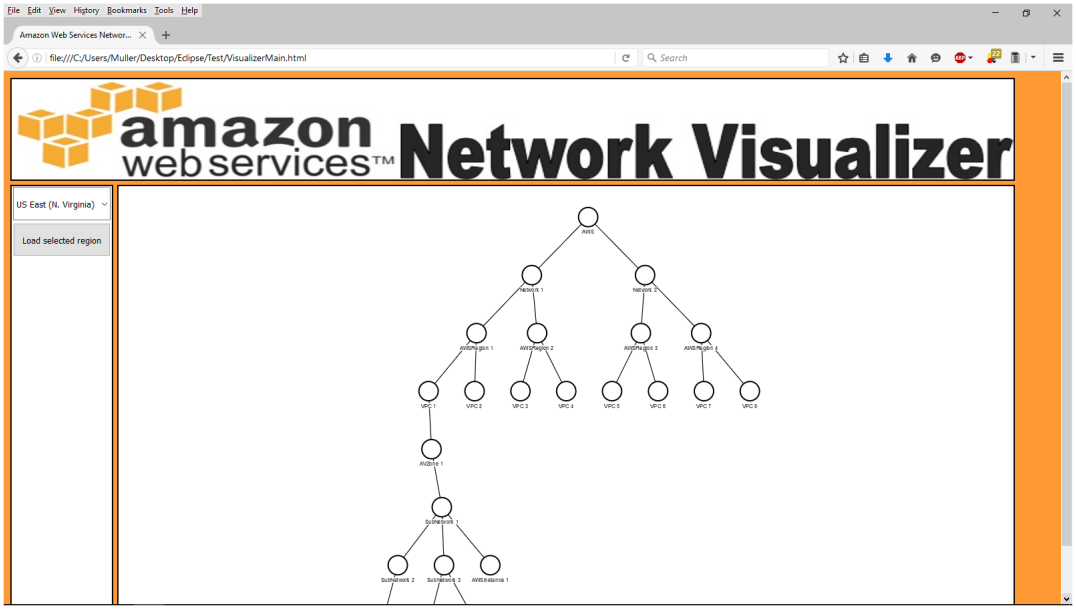


If the user provides incorrect information, they presented with a message indorming them of this ocurrence.



7.2 Visualizer

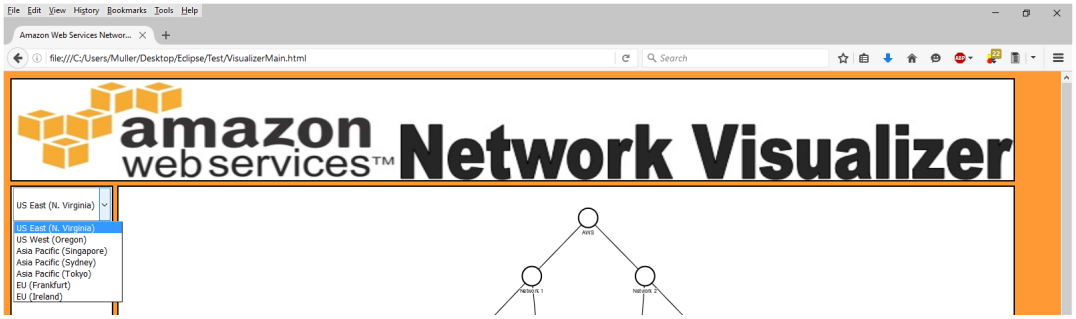
This use case pertains to the network visualization. The network is presented in a hierarchial manner, to make traversing the tree easier.



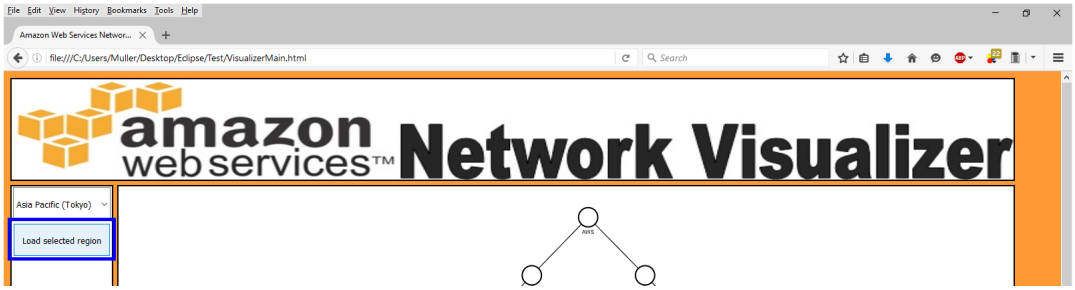
7.3 Regions

The dropdown menu in the left column displays the active region's name. The active region is the one that is shown in the visualizer.

Clicking the menu will display a list of the official AWS regions. Clicking one of the options will set the current region.

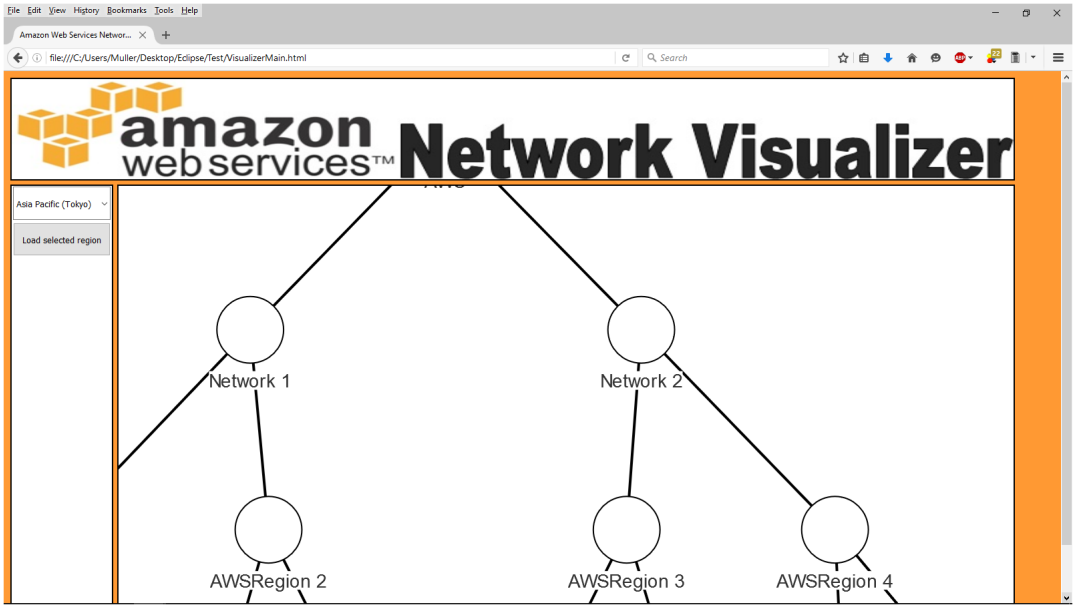


Clicking the "Load selected region" button sends a request to the server, which will then load the selected region and return a web page with the selected network representation



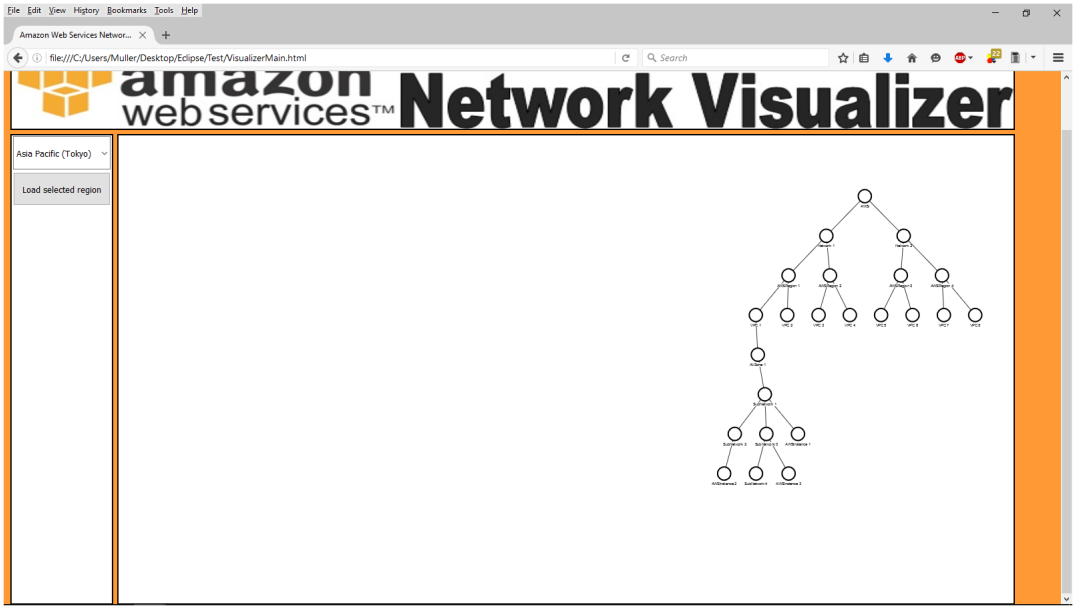
7.4 Zooming

Hovering the mouse over the visualizer's window and rolling the mouse wheel will change the zoom of the visualizer.



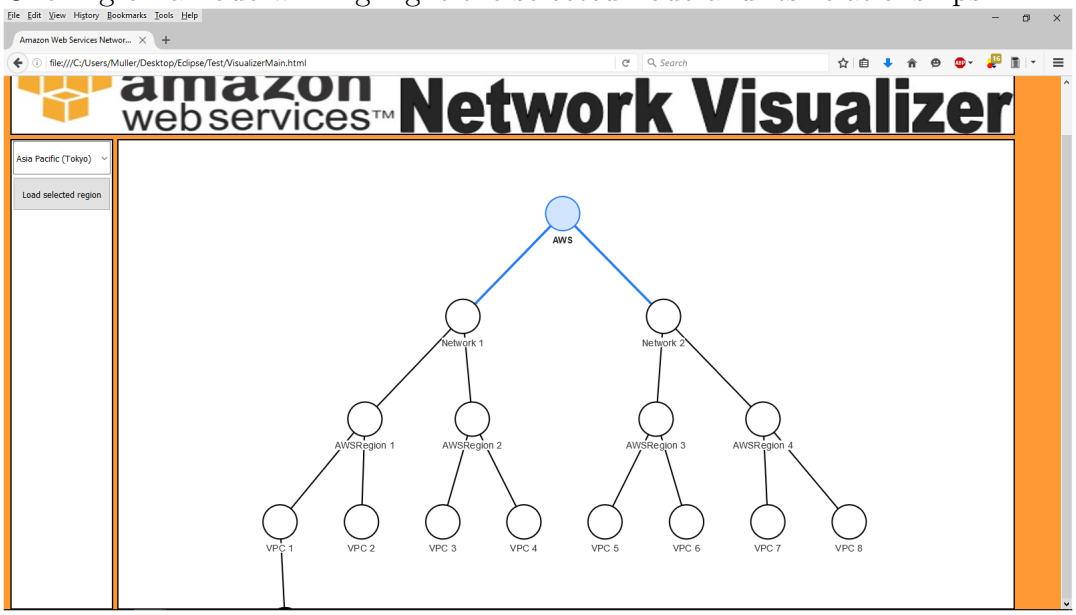
7.5 Moving

Clicking and dragging inside the visualizer's window will move the image.



7.6 Selection

Clicking on a node will highlight the selected node and its relationships.



7.7 Information

Hovering the mouse over a node will display a small box, specifying its name and the number of VPC's it has.