EE/CprE/SE 491 SDMAY-19

Weekly Report 5

10/23/2018 – 10/31/2018

Group number: 5

Project title: *Cyber Network Capture Generator*

Client : *Argonne National Laboratory*

Advisor : *Benjamin Blakely*

Team Members:

Jacob Perin - *Scribe*

Luke Tang   - *Meeting Facilitator*

Collin McElvain - *Chief Architect*

Abdelrahman Baz - *Chief Architect*

Hazem Abdeltawab - *Test Manager*

Bernard Ang - *Report Manager*

Weekly Summary

This week, we had a meeting with the client as well as a separate meeting for the front end and back end team. In the client meeting in Room 3138 Coover Hall at 11AM on the 31/10 , we discussed about the wireframe diagrams that were drawn in the previous week. We also came up with multiple examples of configuration and scenario creations to further narrow down the scope of the project. Besides that, the client also talked about how the databases will work to store the data need to be stored. In the meeting for the backend team, we discussed about the changes that the client wants us to make towards to diagrams that were drawn in the past week. Collin and Jacob also met to work on the backend while Lucas attempted to get his hands on the Iowa State's Proxy Software (ISEAGE.).

Past week accomplishments

As a team, we had separate meetings with the frontend and backend team. The frontend team drew up new wireframe diagrams according to changes suggested by the client. We narrowed down our choices and came up with several design decisions such as using mock databases to first test out our front end as well as using simplistic design focusing on the function

rather than the look of the webpage. We then separated each major interface to be done among the three of us. The backend team has made progress forward but it has been some hwat slow. Collin and Jacob have made considerable work into automating deployment. However, the projects are each large (Xen, Qemu, Chef, Libvirt, etc.) and backlogs work with research. Lucas has been making steady headway on the networking aspect of our project. However, he is somewhat slowed down by attempting to communicate with third parties to get hands on Iowa State's Proxy Software (ISEAGE.)

- ❖ • Bernard :
  - ➢ Drew new wireframe diagrams together with the front end team.
  - ➢ Started up a Django Framework project that the front end team will be working on after fully understanding how the Django Framework works
  - ➢ Researched on how to use the advantages Django Framework has such as the database provided and created together with the project.
- ❖ • Jacob :
  - ➢ Struggled to work through Xen software in an attempt to connect to Vagrant. This is important because it is a large step toward automated deployment with Vagrant/Chef. Libvirt cannot be used directly with the libxl driver. Technology is to new (last year) and is not yet supported by Vagrant. Instead research has been done into using Qemu to deploy virtual machines on Xen. However, this architecture is less documented (although well supported) and has required more knowledge on how Xen works.
  - ➢ Researched relevant Qemu functions to work with modern Xen Architecture to deploy virtual machines.
  - ➢ Researched possible DomU architectures for best performance. Stub-domain vs. Dom0 deployment. Still requires research for best proxy integration (most likely will exist on a DomU and have all traffic ported through it)
  - ➢ Researched difference between PV, HVM, and PVM virtual machines. Pretty in-depth. Learning curve for how Qemu will deploy machines. Aiming for PV at the moment.
- ❖ • Collin :
  - ➢ Researching Qemu documents sent from Jake.
  - ➢ Wireframe research on our website.
- ❖ • Lucas:
  - ➢ Proxy research into Squid
  - ➢ Proxy research into Streisand
  - ➢ Security stack id research into securityonion

- ➢ Firewall research for routing and integrating squid with pfsense
- ➢ Research conversion of VMware ESXi image for Xen
- ❖ •Abdelrahman:
  - ➢ Modified the wireframe diagrams to meet the requirements given by our client.
  - ➢ Started on the implementation process of the new diagrams to create the user interface
  - ➢ Researched what kinds of databases work with Django and how to manage them.
- ❖ • Hazem :
  - ➢ Client wanted to change wireframe diagrams, so we changed most of the diagrams.
  - ➢ Added new diagrams that will be the final design for our web interface.

Individual contributions

Team member	Contribution	Weekly Hours	Cumulative Hours
Bernard Ang	Drew new wireframe diagrams and started a Django Framework project Researched on how to use the Mockup database provided by Django	5	27 + 5 = 32
Collin Mcelvain	Researched on Qemu	4	25 + 4=29
Jacob Perin	Qemu research. Work on connecting open-source technologies. Hypercalls (Xen Backend.) Virtual machine types. Proper setup arguments.	8	28 + 8 = 36
Lucas Tang	Researching network proxy and security options for the virtual network	7	26 + 7 = 33
Abdelrahman Baz	Started on the implementation process of the user interface and modified wireframe diagrams	6	26 + 6 = 32
Hazem Abdeltawab	Modified wireframe diagrams.	7	36 + 7 = 43

Plan to accomplish for the next week

- ❖ • Bernard :
  - ➢ Implement the diagrams drawn and the interface that was tasked to work on
  - ➢ Make sure to use the database to pull information to populate the page.
- ❖ • Jacob :
  - ➢ Establish connection between Vagrant, Qemu, and Xen.
  - ➢ Draw up and document architecture. Verify performance. Make note of alternatives.
- ❖ • Collin :
  - ➢ Helping Luke with proxy setup.
  - ➢ Going over some wireframe decisions for frontend build with Hazem.
- ❖ • Lucas:
  - ➢ Implement proxy solutions on the given machines
- ❖ •Abdelrahman:
  - ➢ Continue working on the implementation of the user interface

- ❖ • Hazem :
  - ➢ Implement Wireframe diagrams to website, and push them to git
  - ➢ Connect finalized interface to a mock database using Django.