Enterprise VPN

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Introduction

As known to faculty and students the act of connecting to the Computer Science department's resources off campus is difficult with the security standards the campus uses for its safety. As such, the primary goal of this project is to create an efficient and comprehensive way to manage and access the Computer Science department's resources while off site, thus we use a VPN. The goals our group have completed for the VPN were: streamlining the user account creation process, improving the security standards of the servers, detecting malicious activity, and notifying administrators when needed.

Terminology

VPN: Virtual Private Network
Janus: Application Server for VPN Client interactions
Orion: Web Server for VPN Client Management
Redis: Database for VPN Client Information

Requirements

To make the VPN easier to use and manage:

- Create a form which allows users to request access to the CS Departments Servers.
- Automate the process of creating configuration files for each user.

To improve the VPN's security:

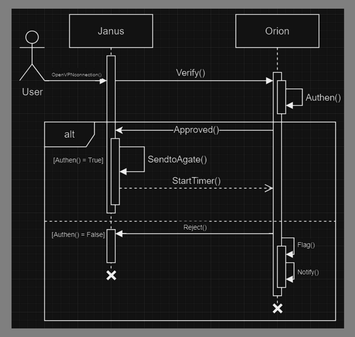
- Use monitoring software to detect malicious activity.
- Generate notifications of malicious activity to administrators.

Data

Data that is collected for this project are speed of automation, how often the security check happens, what security leaks are found, and current users on VPN. We will also be collecting data from students in regards to how well the site functions in an ease-of-use test.

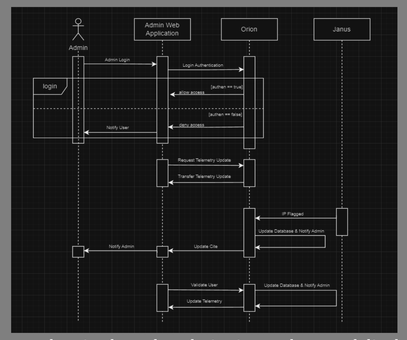
Sequence Diagrams

Student Connection



Process showing a CS VPN User connecting to Janus and going through Verification.

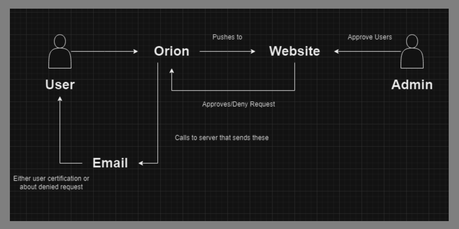
Admin Interface



Process showing how the admin site: updates and displays new information and receives notifications,.

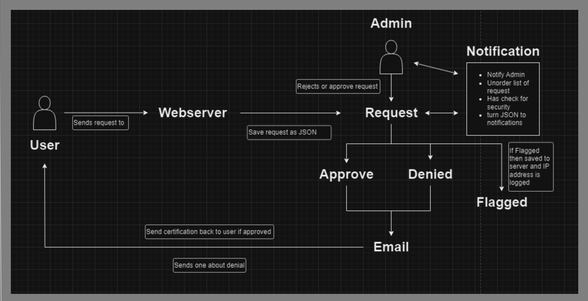
Sequence Diagrams Continued

Account Creation



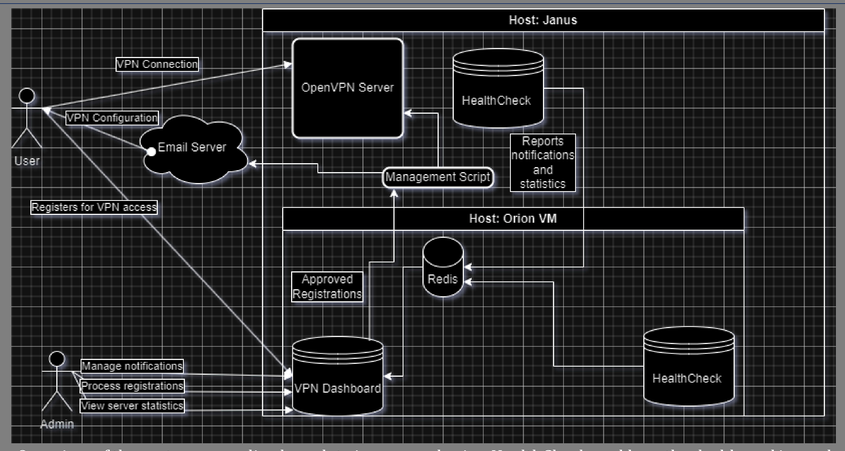
Process showing how Students apply for Accounts and how the process is automated for Admin.

Notification/Email System



Process showing how Emails and Notifications will be distributed through the system.

General System Overview



Overview of the system, regarding how data is managed using HealthCheck, and how the dashboard is used to handle user registration

Success Criteria

- The creation of a new user permission takes three to thirty seconds with automation.
- The website load time should not take longer than ten seconds.
- The website gets good reviews from students doing ease of use test.
- A notification of security risk sending to an administrator takes less than thirty seconds.

Results

Ease of Use Results

- Created a webpage interface for users to create accounts with.
- Automated the creation of User Accounts for Admin using a website.

Security Results

- Added an Authentication system when signing in to verify Users.
- Added an IP flagging system to better secure Janus against malicious attackers.
- Added a Packet Sniffer to Janus to better manage active connections.

Conclusions

Through this project we were able to expand upon a system that assists UNH Students, Professors, and the Network Administrators of the CS Department with connecting to secure CS servers. The work done allowed for ease of use and security to act in a more modern fashion for users.

Acknowledgements

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