SnakeWrangler - A Multi-User IPython Notebook Management System

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Introduction

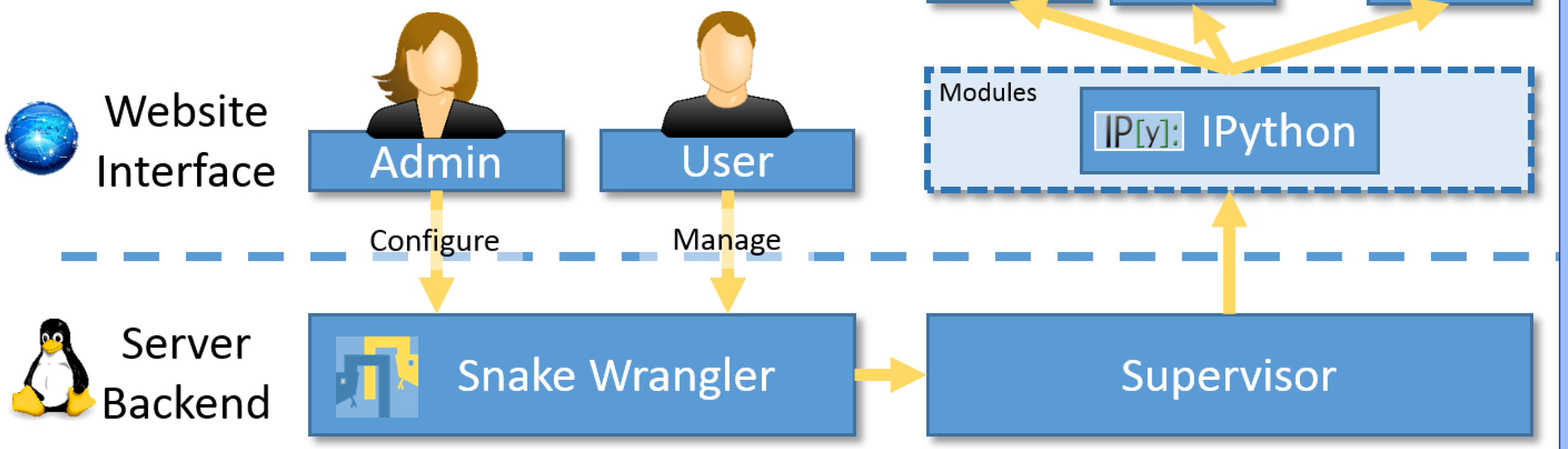
SnakeWrangler is a straightforward software platform designed to alleviate the burden of running, monitoring, and maintaining IPython notebooks. SnakeWrangler automates the configuration and deployment of the IPython notebook web servers for the instructor. As there is considerable effort required to set up and maintain IPython notebooks this project will save the instructor time allowing them to focus on other tasks; the project allows the instructor to do a one-time setup for students and not have to ensure that each individual IPython notebook is active and online.

Implementation:

{Arrows indicate data flow}

1. Admin uses Admin section of website to setup IPython notebook for user.

3. User logs into Website and is able to view the status of their IPython notebook instance



2. Website calls SnakeWrangler and SnakeWrangler then runs scripts to create the IPython notebook and configure the environment for the user.

4. User clicks start IPython notebook which causes Supervisor to start the notebook

5. User is able to stop and restart their IPython notebook in the event the user introduces an infinite loop which crashes the IPython notebook instance.

Future Work

Future expansions of SnakeWrangler include utilizing Jupyter, a new branch of IPython that adds support for multi-user notebook servers through use of JupyterHub. As SnakeWrangler was designed to allow future addition of modules for in-classroom use, adding more modules to allow students to access other environments is an additional expansion.

Design

This project joins two common methodologies: Decentralized where the instructor supplies all students with a script that the students run and automatically configure and run the IPython notebook, and Centralized where the instructor configures and maintains all of the notebooks in one location. This combination allows one central location that is configured by the instructor while also allowing the students to stop and start their own notebook as needed.

Evaluation

SnakeWrangler has promising results, it has the potential to alleviate students from configurating and managing webservers on personal machines. Students will no longer be required to contact their instructor when an IPython notebook crashes due to student-induced infinite loops in their code, instead they will be able to manage (start/restart/stop) their own IPython notebook. Instructors will no longer need to watch for communication from students requesting the restart of a notebook.

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