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AUTOMATION OF NETWORK/SERVER SECURITY PROVISIONING USING DEVOPS TOOLS.

DESIGN MANAUAL

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DESIGN

This application will be a Django/Python front-end that will connect to and run Ansible playbooks using a GUI instead of a CLI. This tool that will be able to implement the Automation of network/server security provisioning using DevOps tools. The GUI will allow the user to call a playbook and configure and or run it simplifying secure network and server management.

BASIC FLOW OF APPLICATION

When the application launches, the first paged the user will be presented with will be the Login page. Users will need to authenticate before being able to view or configure the playbooks.
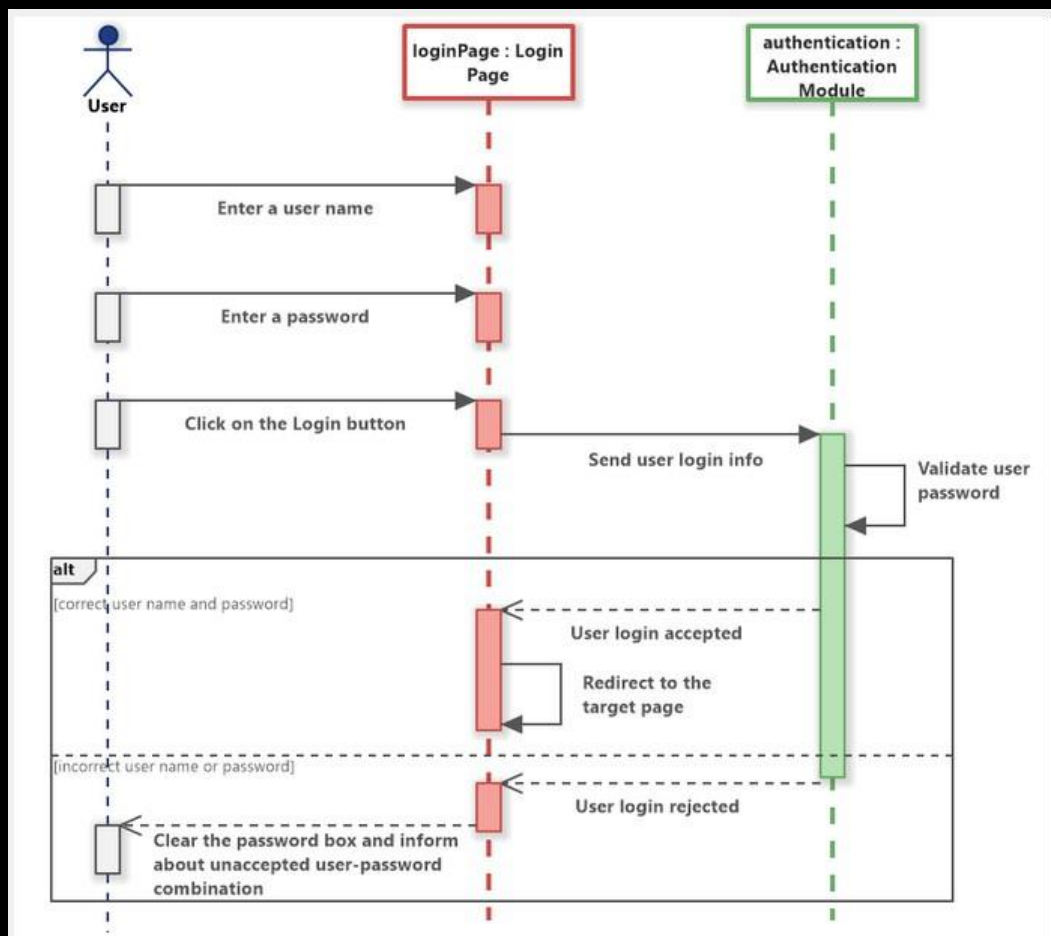
(Rodina, 2020)

Then the user will be presented with a menu page, there will be the option for Network Admin or Security Admin.

When the network Admin option is selected, the python Django GUI will allow users to configure and execute ansible playbooks to configure and provision networks.
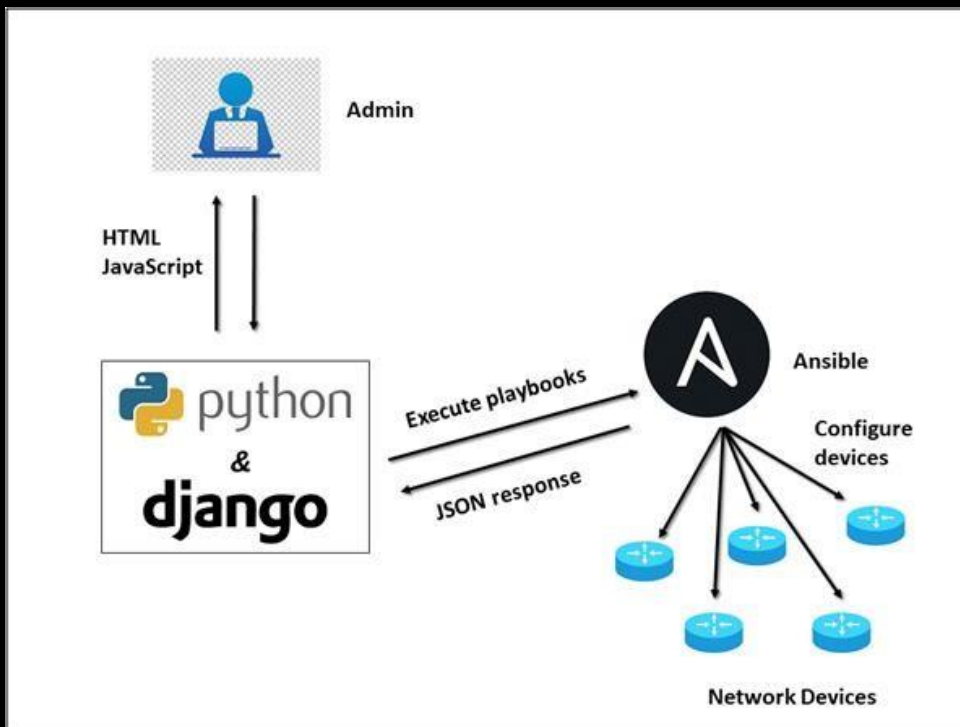
(Ansible for Networking with Django-based GUI — Simple Use Case, 2020)

While networks are a fundamental part of an IT organization, real automation of the network stack is not really used. Most enterprises attempt to automate their network, they use complex tools that are specific to certain commercial vendors. These processes must be managed manually, which is time consuming and results in reduced dexterity among teams; this also isolates networking teams from the evolving DevOps transformation slowing the development of IT departments and enterprises. [Ansible, 2020] Bringing automation into networks will provide:

- Automation of configuring the network stack from system to access to core services
- Testing and validating the current network state
- Continuous compliance to check for network configuration drift

The application will use the Ansible playbooks to provide automation of configuring the network stack from system to access to core services, testing and validating the current network state and continuous compliance to check for network configuration drift

When the Security Admin option is selected, the python Django GUI will allow users to configure and execute ansible playbooks to automate security with Intrusion detection & prevention systems,

Security information and event management and Privileged Access Management. The application will use Ansible to automate the firewalls regulating what traffic can pass between networks, shielding applications that are internet or intranet facing. It will employ policies and log configuration, allowing a quicker turnaround for investigations and remediation. Intrusion detection & prevention systems [IDPS] monitor network traffic for suspect activity and broadcast alerts and prevent attacks when a recognised attack pattern is detected. The application will use Ansible to simplify rule and log administration, resulting in more proficient security operations. Security information and event management [SIEM] systems gather and examine security events aid in detection and response to incidents.

Ansible provides security analysts with wide range of data sources to help better assess incidents. Privileged Access Management [PAM] tools monitor and oversee privileged accounts and access, Ansible simplifies the alternation and managing of privileged authorisations to automatically prevent and remediate high-risk activities. [Ansible, 2020]

Automating Security Operations allow for:

- ♰ Configuration a sequence of jobs that share inventory, playbooks or permissions to fully automate investigations
- ♰ Centralising job access and execution and role provisioning/building by pairing user directory with infrastructure
- ♰ classify patterns, analyse infrastructure events, monitor glitches, and compare unrelated events, by integrating with 3rd party external log cluster services [Ansible, 2020]

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