Computer and Informatics Engineering Projects

SOFTWARE DEFINED **NETWORKS** MONITORING **SYSTEM**

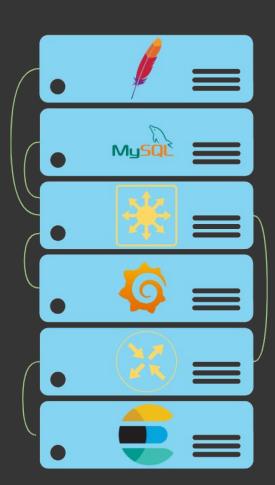
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Traditional Network vs. SDNs



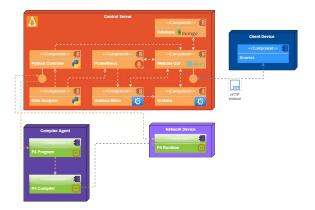


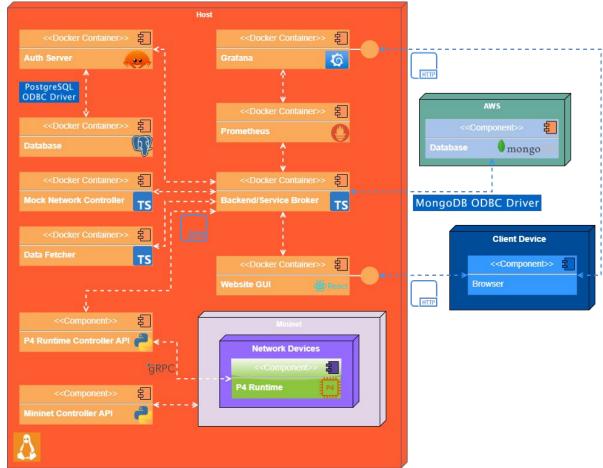
Goals for this milestone



- 1. **Deploy networks** via controller request or **connect to existing** networks.
- 2. **Programming** running devices
- 3. View existing topologies
- Backend fetches the device counters for grafana

System Architecture





Main Components

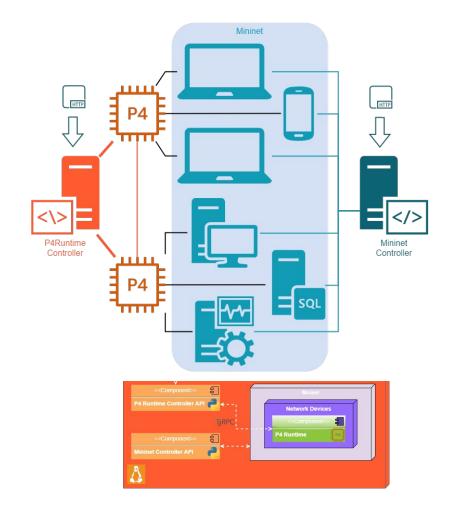
P4Runtime Controller API, Backend and metric processing, Dashboard

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Controlling APIs

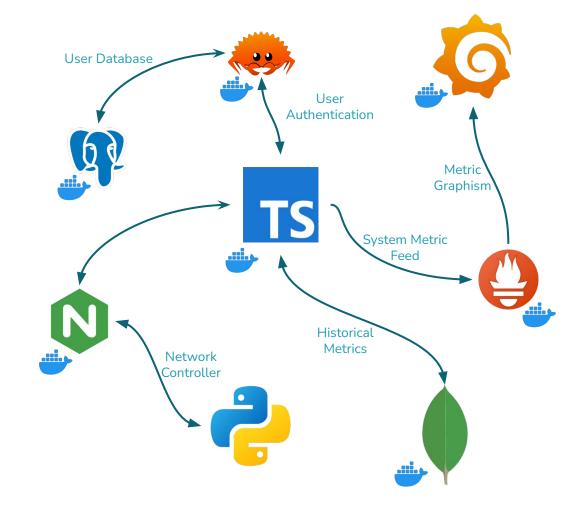
Two main APIs control the environment:

- Translates HTTP requests to effective communication with P4 Devices via the P4Runtime which uses gRPC.
- Programmatic control over Mininet network using HTTP request.



Backend

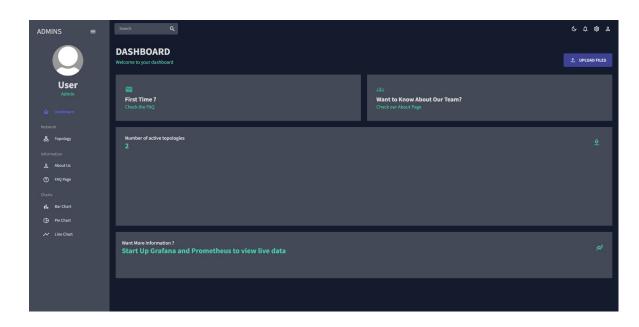
- Flexible data model (MongoDB)
- Authentication / Authorization / User metadata
- Integration with Prometheus and Grafana for metric visualization
- Service Broker
- Microservice Architecture



Dashboard

Interface to display the information about the network topology:

- Generates table displaying the available network topologies
- Displays the hosts, switches and the links of the network, and their details
- Includes information about our team and to help non-experienced users



Demo

Upcoming features

- User authentication.
- Prometheus and Grafana data implemented within React.
- Visual representation of the network.
- Transition from emulated to real networks.