

GOALS

- Controlled validation of distributed architecture
- Assessment of scalability and resilience
- Monitor effects of network latency and bandwidth
- Gather network logs and induce insights
- Authenticate reliability of the architecture

CHALLENGES

- Unfamiliarity of Fed4FIRE+ platform
- Model an IoT device as Dockerize application
- Scale up devices (Docker containers) in quick time
- Uncertainty about analytics tools and resources
- Time constraint

DEMO SETUP

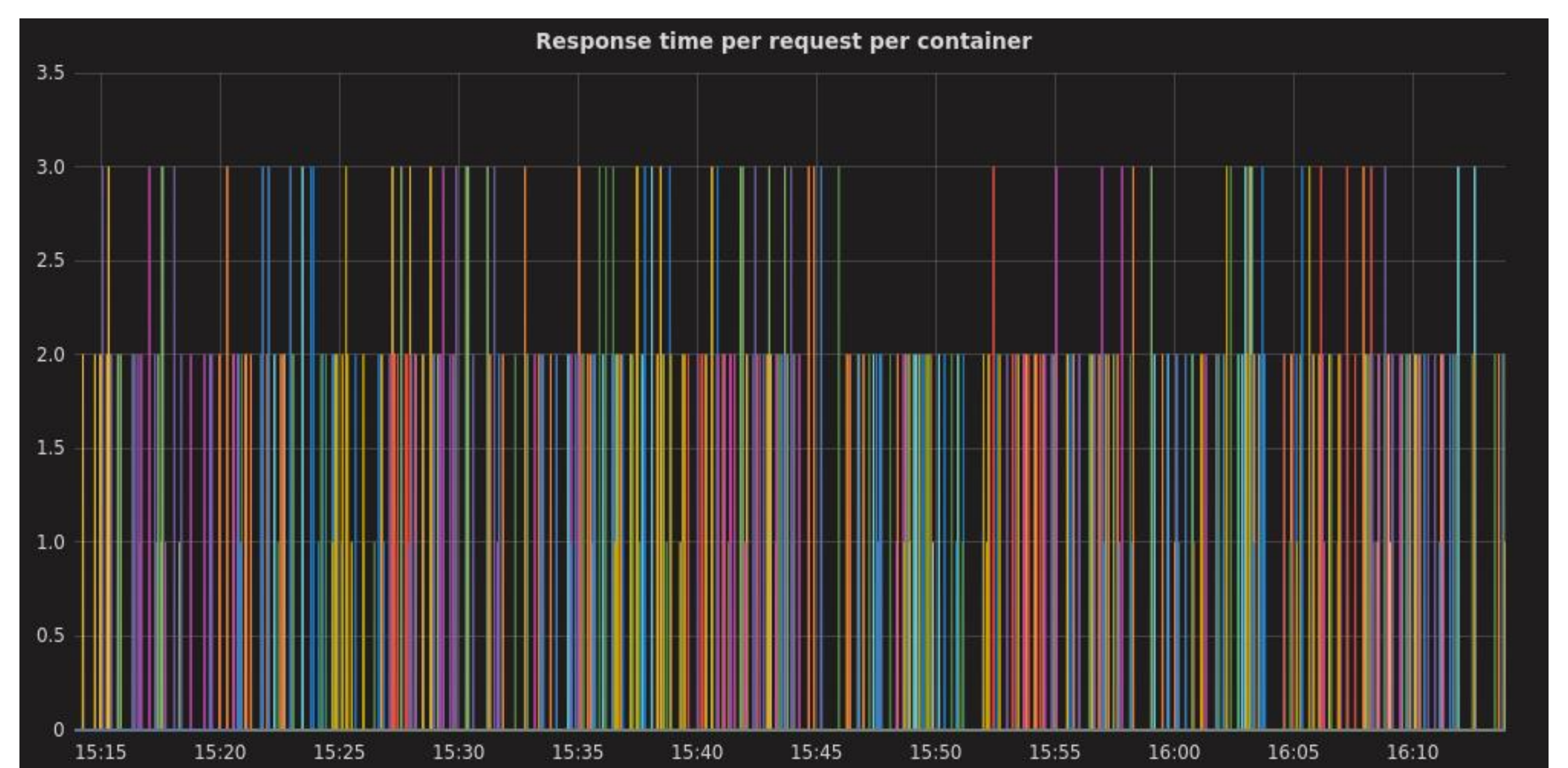
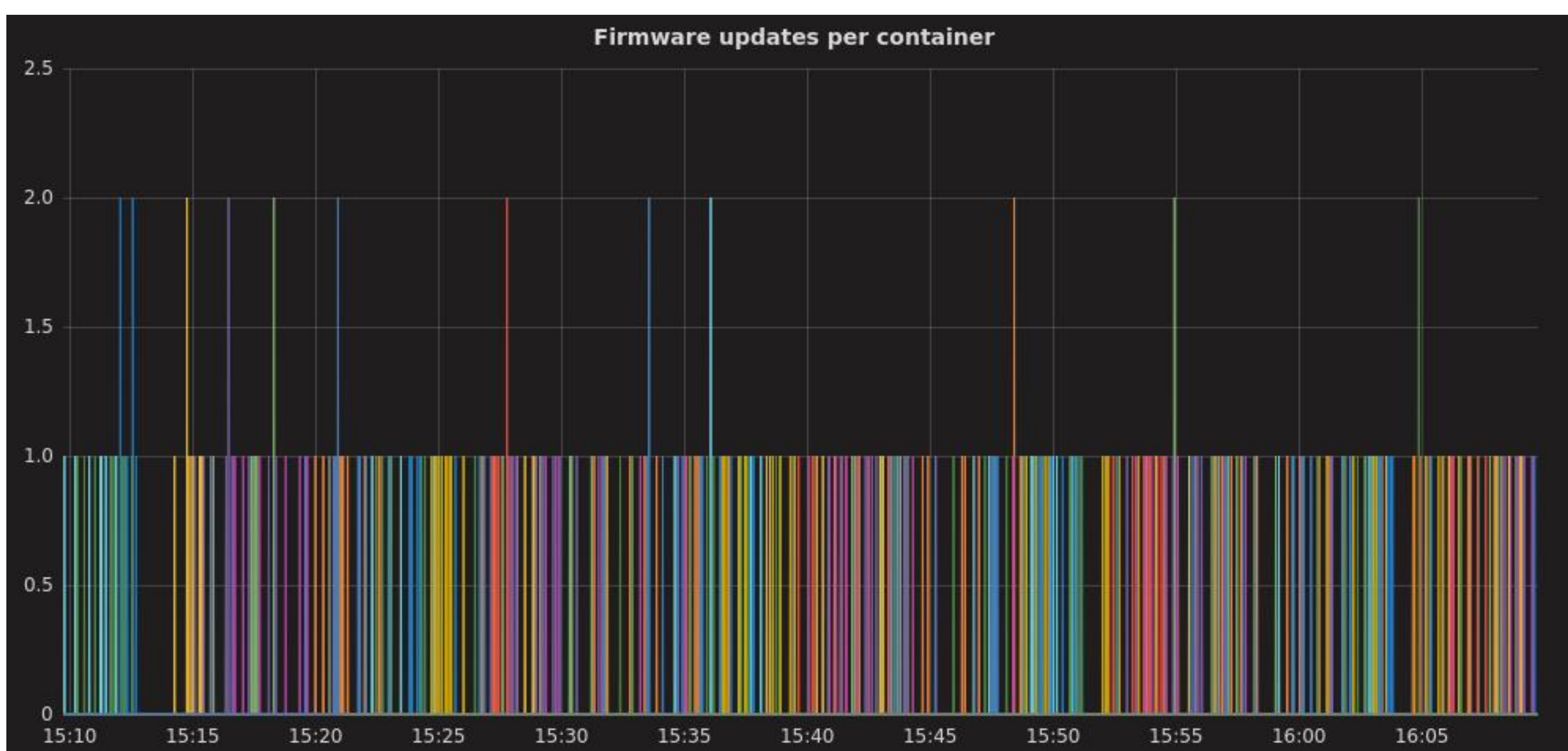
- Utilized jFed to provision and manage experiment on Virtual Wall 1 testbed
- Employed ESPEC for an automated installation of container orchestration system e.g. Kubernetes
- Deployed Kubernetes cluster comprised of 100 worker nodes
- Installed control and monitoring setup to execute and scale experiment on K8 cluster
- Ran 1000 docker containers, each having 10 parallel threads
- Made use of Grafana and influxDB for data monitoring and visualization

RESULTS

- Authentic proof of scalability of asvin.io architecture
 - Effortlessly scale up number of devices to 10, 100, 1000x
- The architecture is robust and reliable
 - Requests from 10,000 devices handled smoothly
- Optimization of parameters on asvin.io servers for better performance
- Firmware roll out management on asvin.io is efficient and trustworthy
- Verification of life cycle of an IoT device
 - Registration -> Firmware update -> Cancellation

MORE RESULTS

- Response time and number of firmware updates on asvin.io servers monitored



CONCLUSIONS

- asvin.io cloud server architecture is resilient, reliable and highly scalable
- The analytics assisted in better configuration of the servers
- asvin.io is capable of handling large number of IoT devices and their firmware roll outs
- It is quite easy and efficient to run experiments on Fed4FIRE+ infrastructure
- The architecture of asvin.io is market fit

POST MORTEM

- The critical components of the architecture were identified and optimized
- Impact on both research and business activities of asvin.io
- Fed4FIRE+ provides a great opportunity by open calls to SMEs
- Fed4FIRE+ offers diversified resources on different testbeds
- Excellent technical support and documentation