

Schedule 2

(formerly ENR1)

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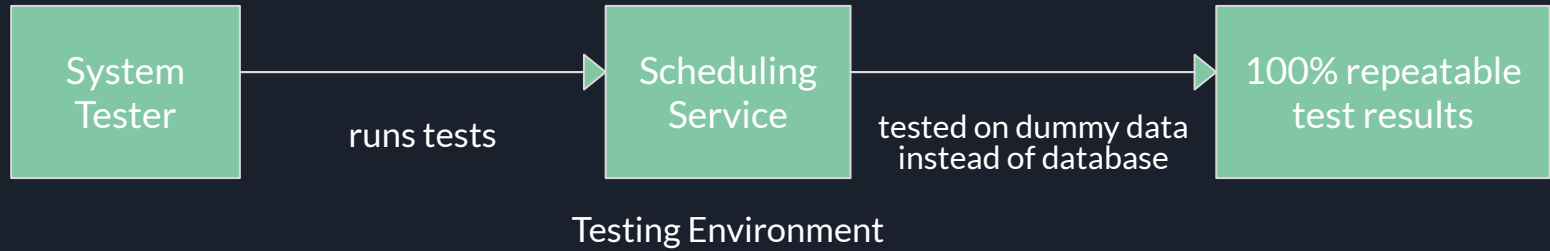
Alžbeta Kulichová



Overview of quality requirements

- Modifiability
 - Scenario: Add a new conflict rule
- Testability
 - Scenario: Testing of new course statistics
 - Scenario: Testing of scheduling - Tomáš
- Performance
 - Scenario: Mass schedule viewing - Bety
 - Scenario: Repeated statistics queries
- Availability
 - Scenario: Notification Service Availability - Bui
- Scalability
 - Scenario: Add new statistics category - Kuba
 - Scenario: Growing number of users for schedule viewing
- Security
 - Scenario: Unauthorized course modification - Erik
 - Scenario: Stolen access token used by attacker

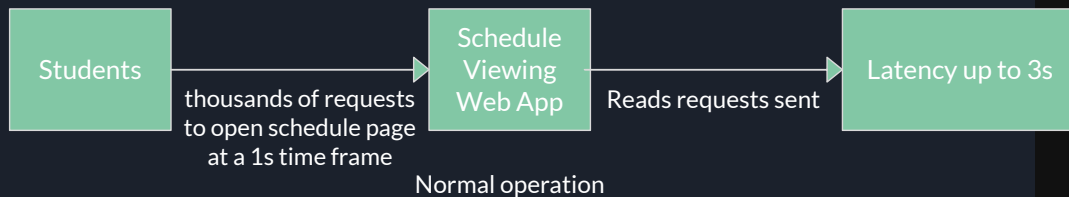
Testing of scheduling



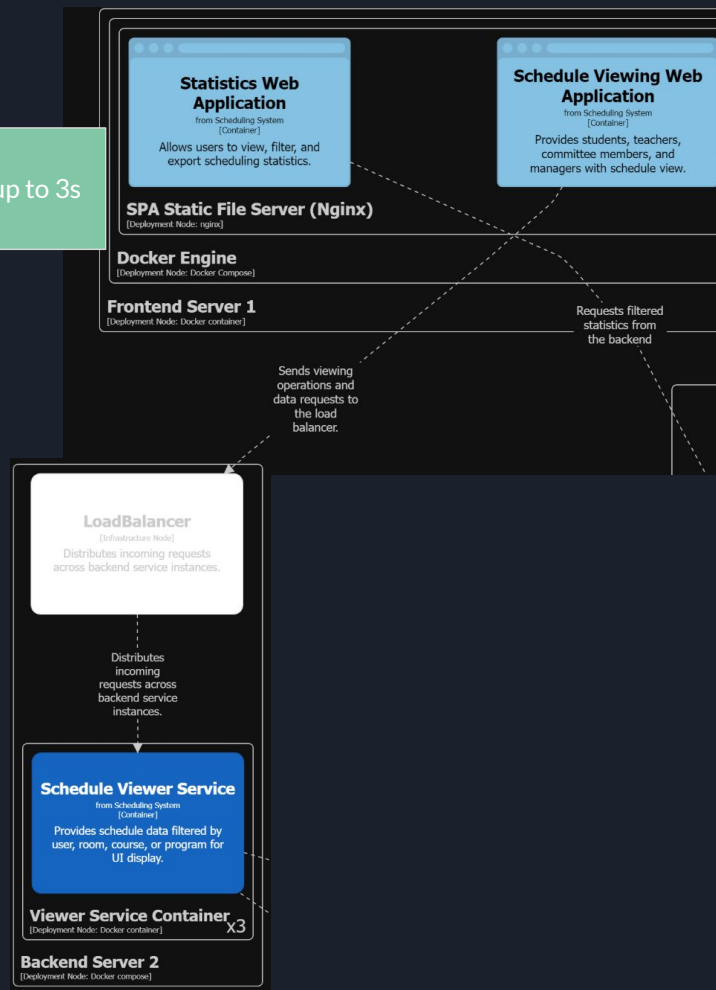
TESTABILITY

- scheduling and conflict logic are tested without using UI or database (Unit tests)
- tests are deterministic and fast
- Solution: no need to modify architecture as there is a separation between business logic and infrastructure

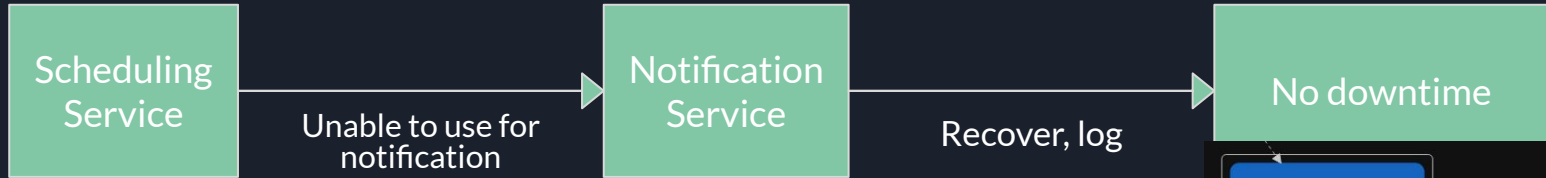
Mass schedule viewing



- when timetable is published, thousands of students request schedules at the same time
- the Schedule Viewer Service is replicated and stateless, so requests are distributed evenly
- Solution: architecture update is not needed as horizontal scaling and load balancing are already implemented

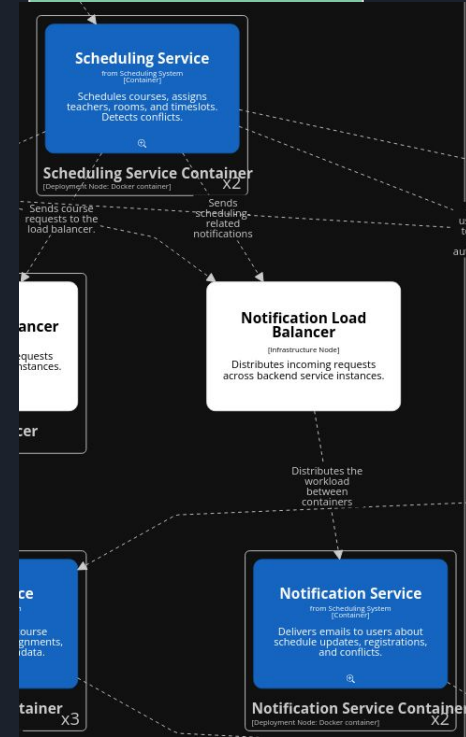


Notification Service Availability



Normal operation

- System now runs multiple duplicates of Notification Service under a load balancer
- When some Notification Service clone returns error while sending notification, we log it and dispatch to a working instance
- No synchronization needed, as instances of Notification Service operate independently without shared state



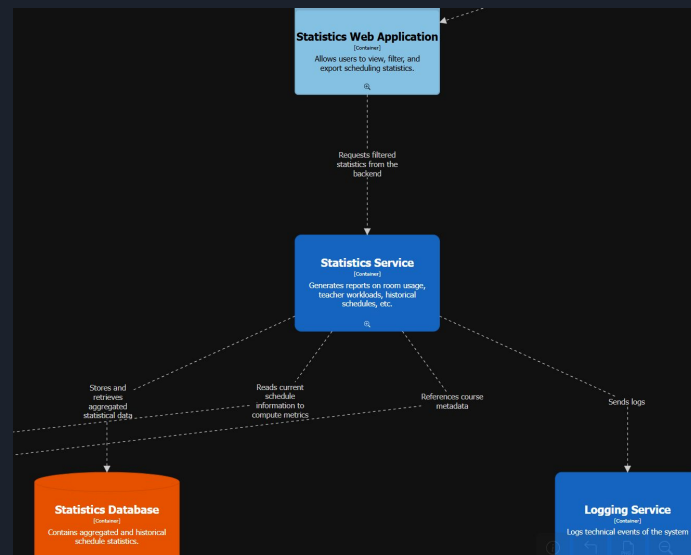
AVAILABILITY

Add new statistics category



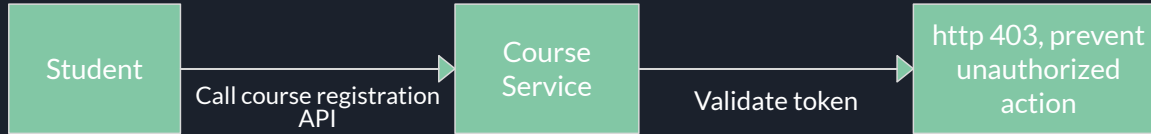
Normal operation

- Solution: Architecture is able to handle this, everything goes through the statistics service, which requests the data needed from the course service



SCALABILITY

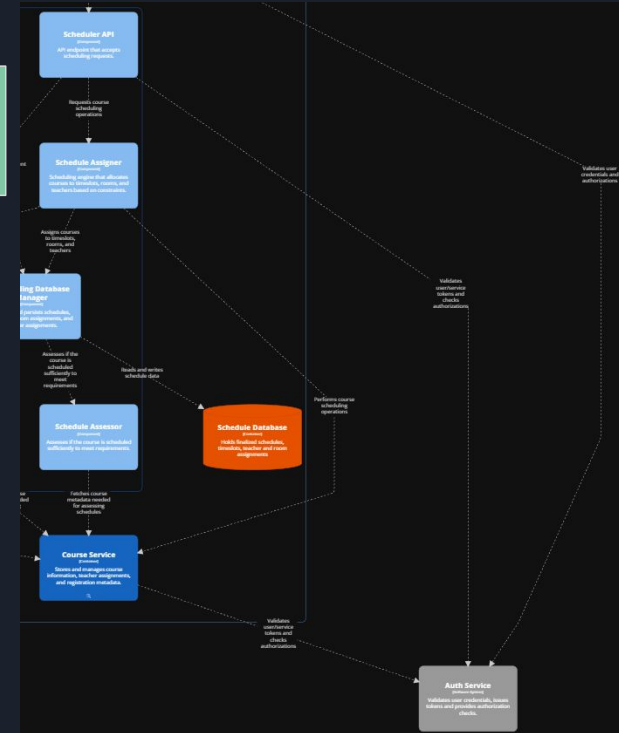
Unauthorized course modification



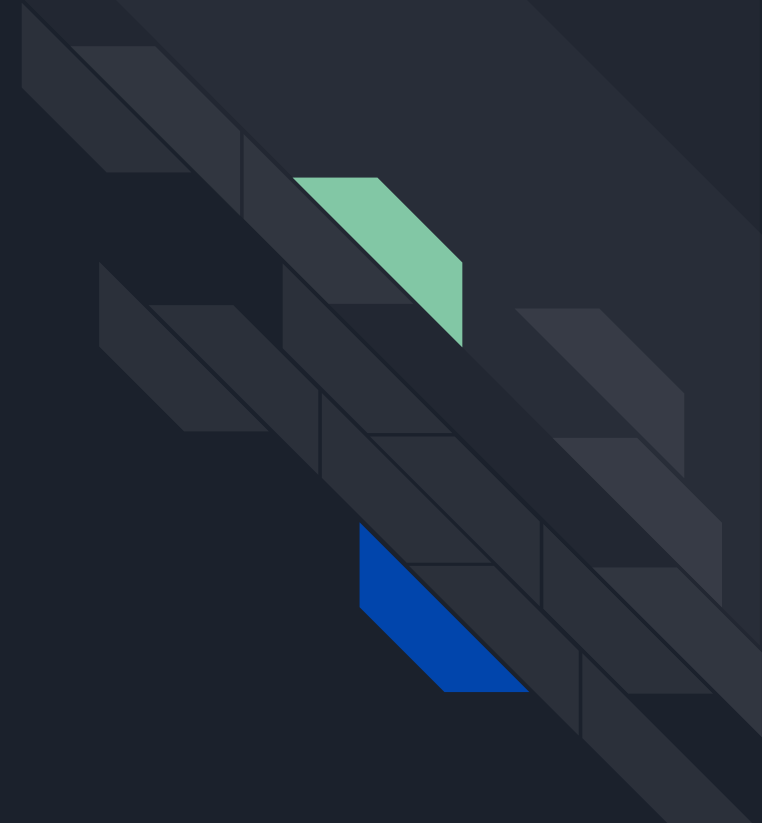
Normal operation

SECURITY

Solution: The architecture must be updated to bridge the Auth Service with the Scheduler API. This ensures that specific API calls related to teacher schedules and administrative tasks are strictly protected against unauthorized access.



**Thank you for
your attention**



Any questions?

