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# Building Distributed Access Control System Using Service-Oriented Programming Model

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# Overview

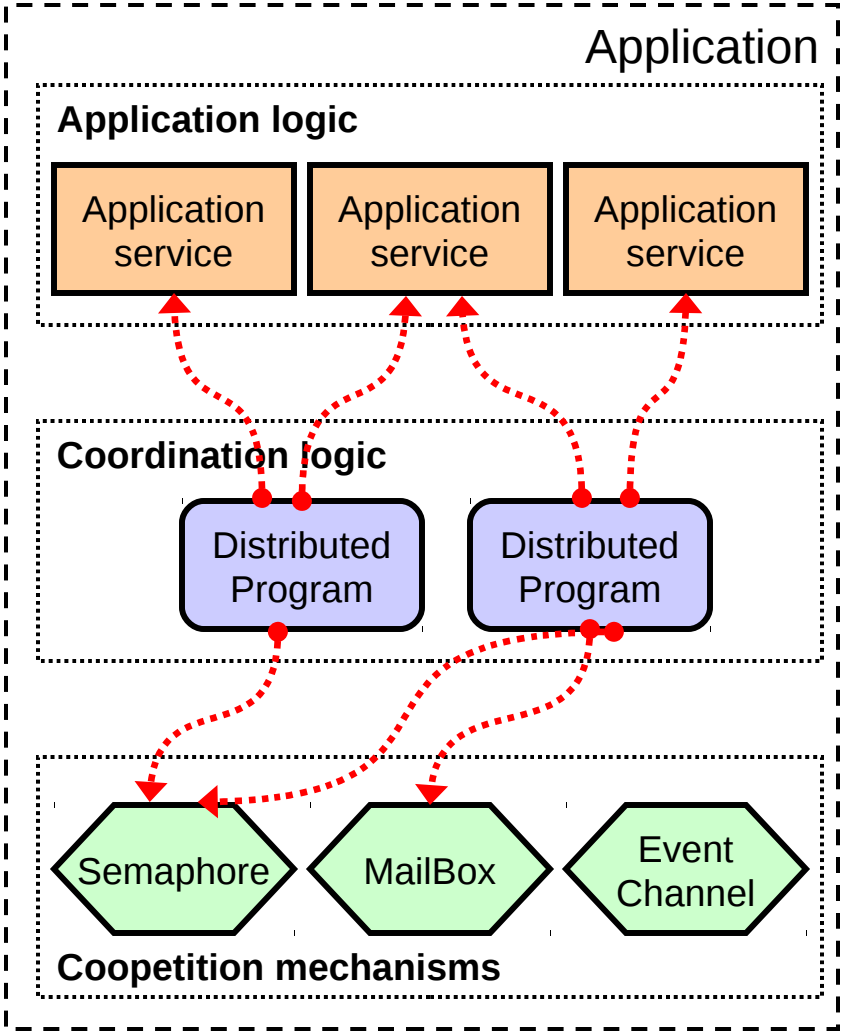
- Introduction
- Service-Oriented Programming Model
- Distributed Access Control System
  - Architecture
  - Performance analysis
- Conclusion

# Introduction

- Service-Oriented Computing
  - Services as fundamental elements for application development
- Services
  - Self-describing and open components
  - Web Services technology stack
- Access Control
  - Exchange of services in a secure, controlled and acountable manner

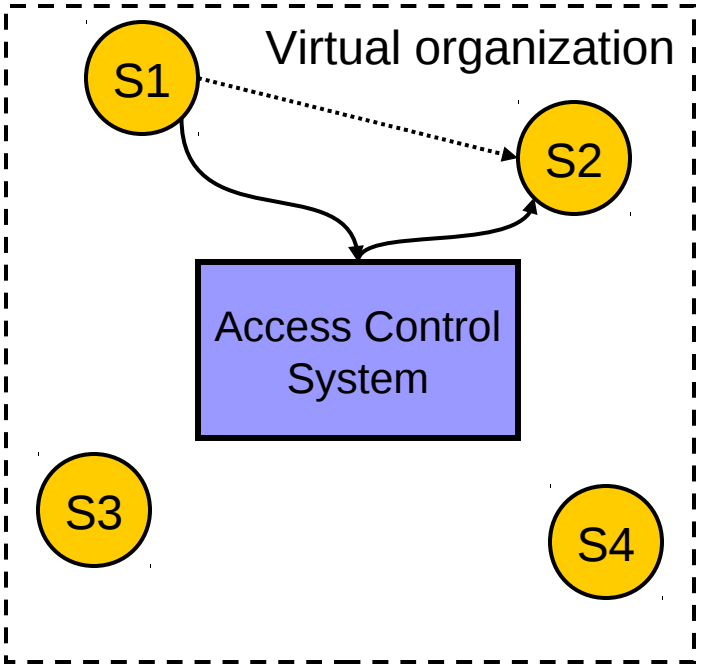
# Service-Oriented Programming Model (SOPM)

- Execution environment
  - Coopetition-based Distributed Architecture (CBDA)
- End-user design environment
  - Simple service composition language (SSCL)
- Translation environment
  - Distributed translation and interpretation of SSCL programs

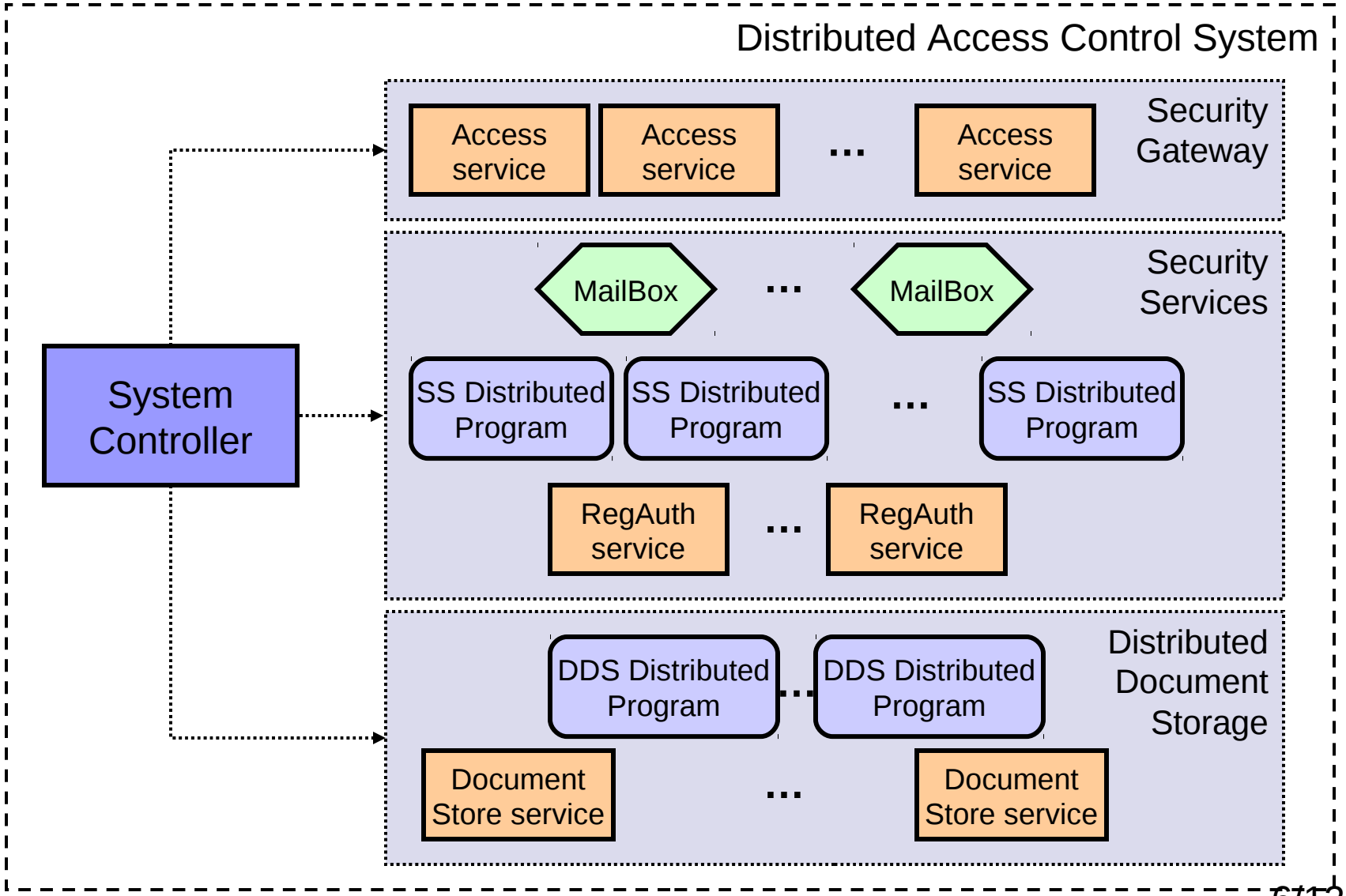


# Access Control System (ACS)

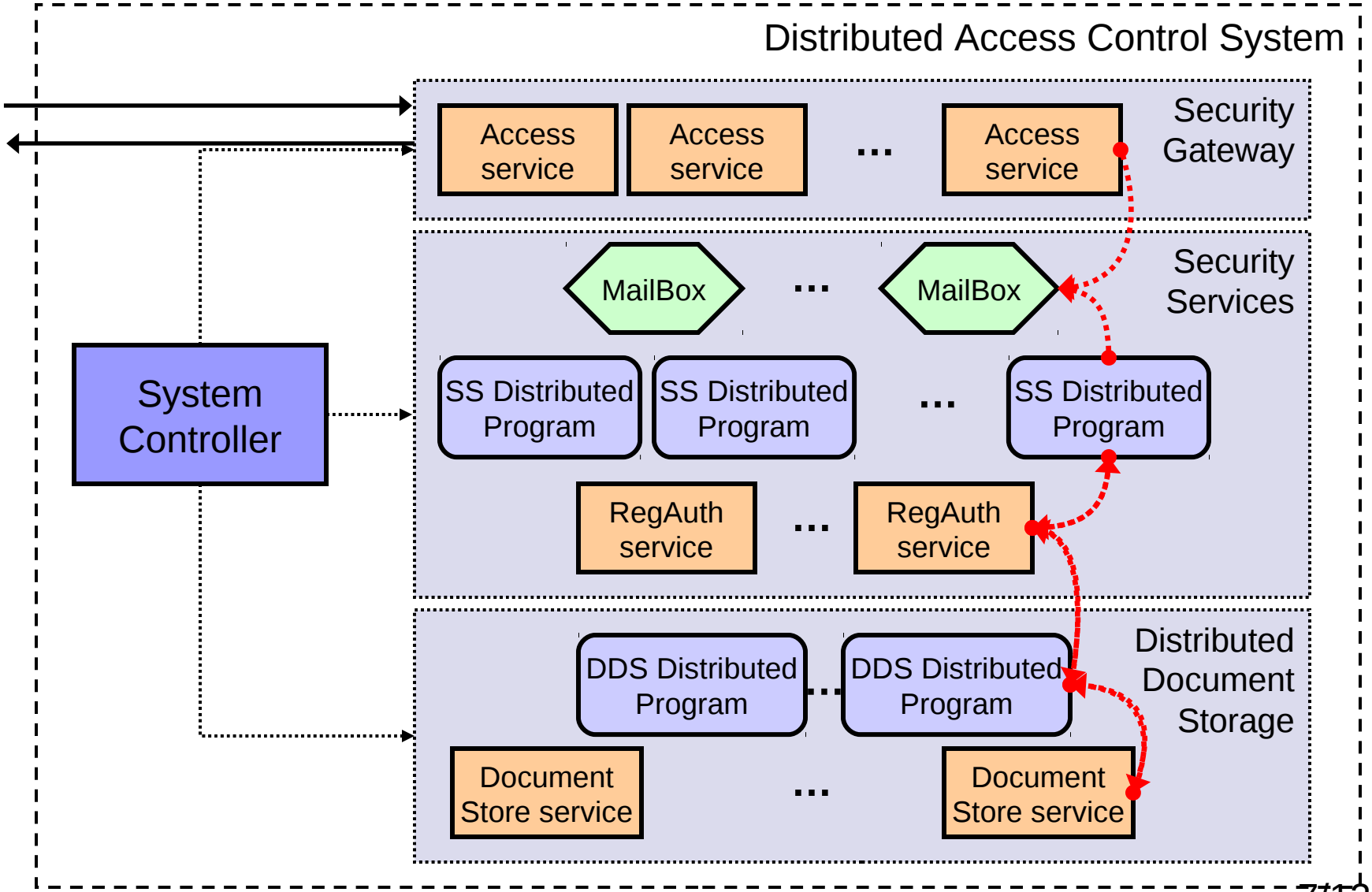
- ACS function
  - Controlling authority in virtual organizations
    - Registration
    - Authentication
    - Authorization
    - Secure communication
    - Usage tracking
- Research goals
  - Distributed ACS using SOPM
  - Performance analysis



# Distributed ACS architecture

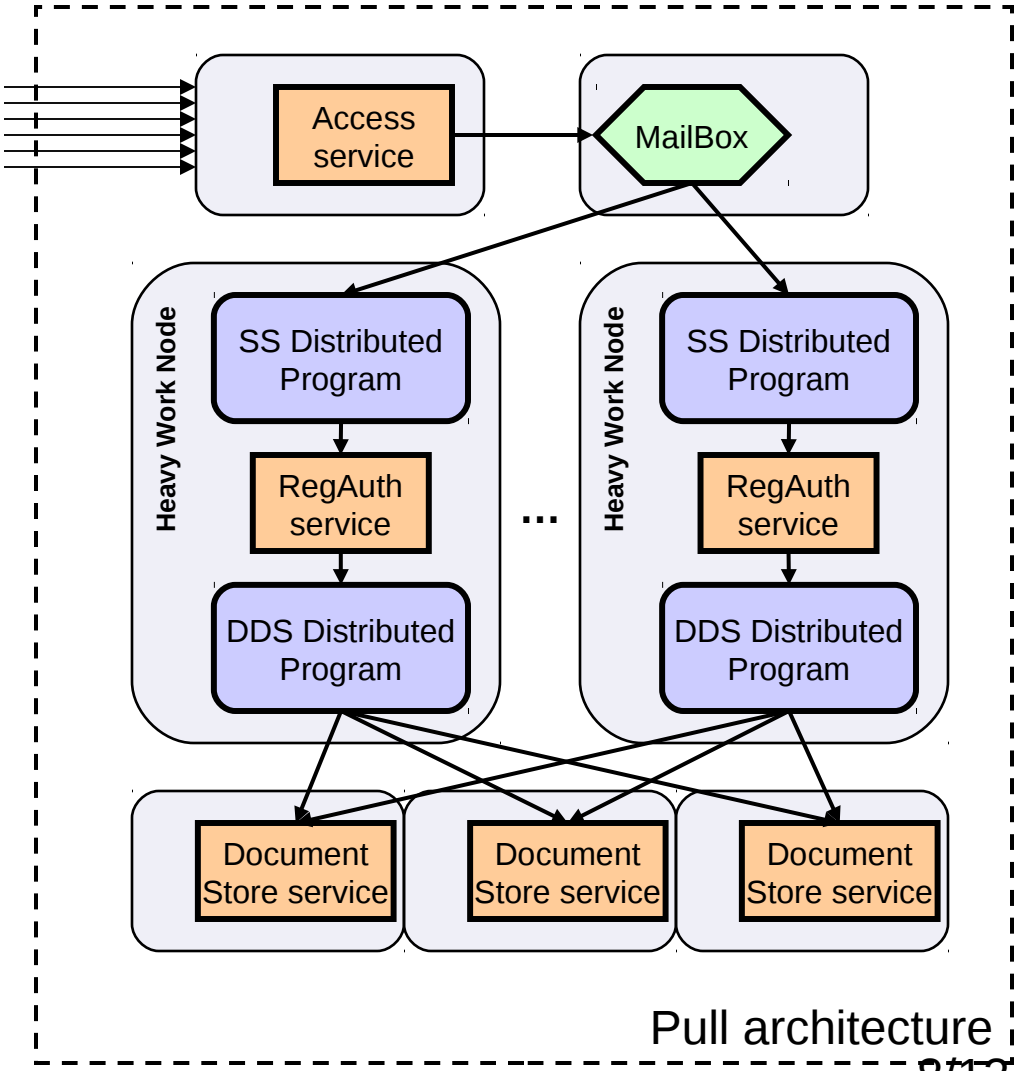


# Distributed ACS architecture



# Performance analysis

- Architectures
  - Monolithic
  - Distributed
    - Pull
    - Push
- Parameters
  - Parallelism
  - Concurrency
  - Workload




Pull architecture

# Performance analysis

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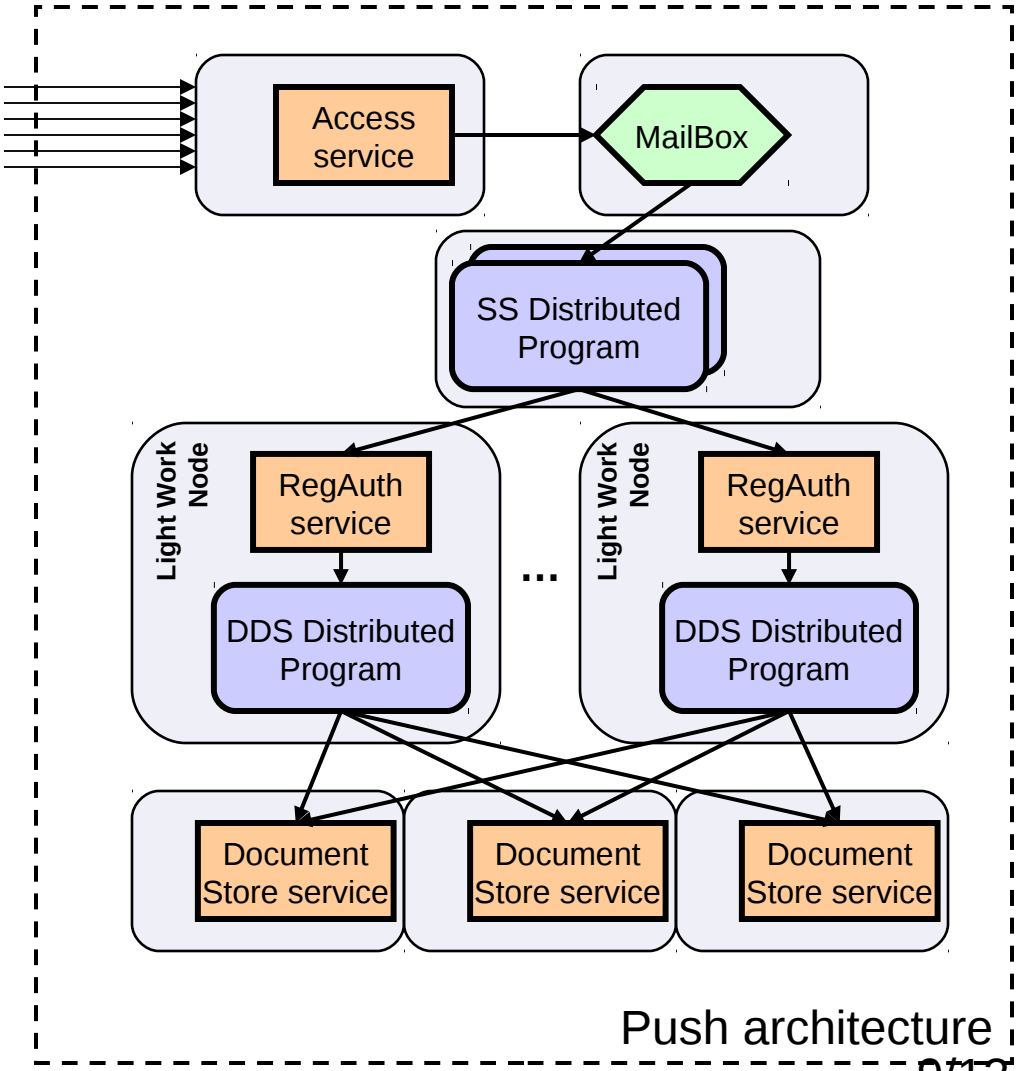
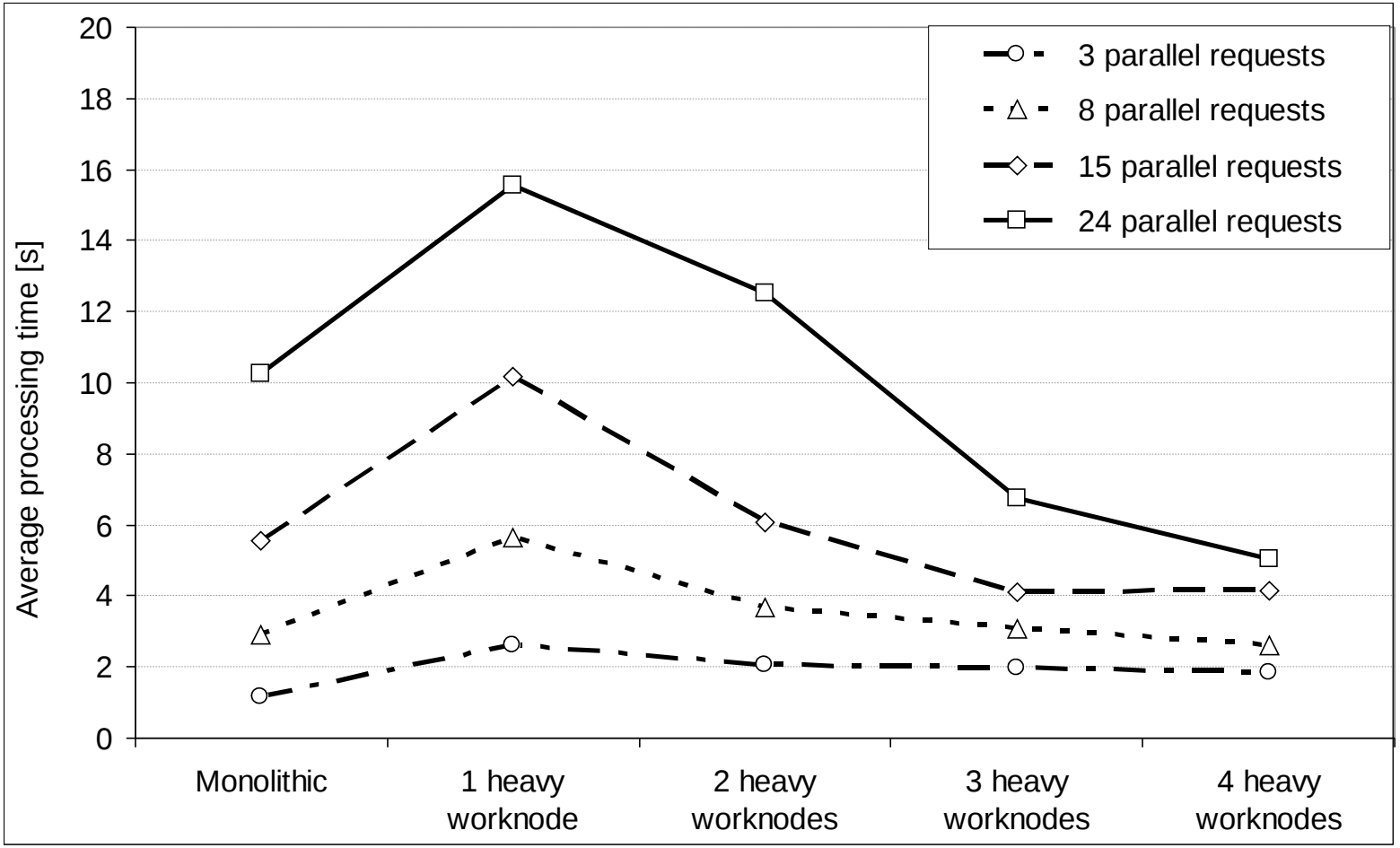


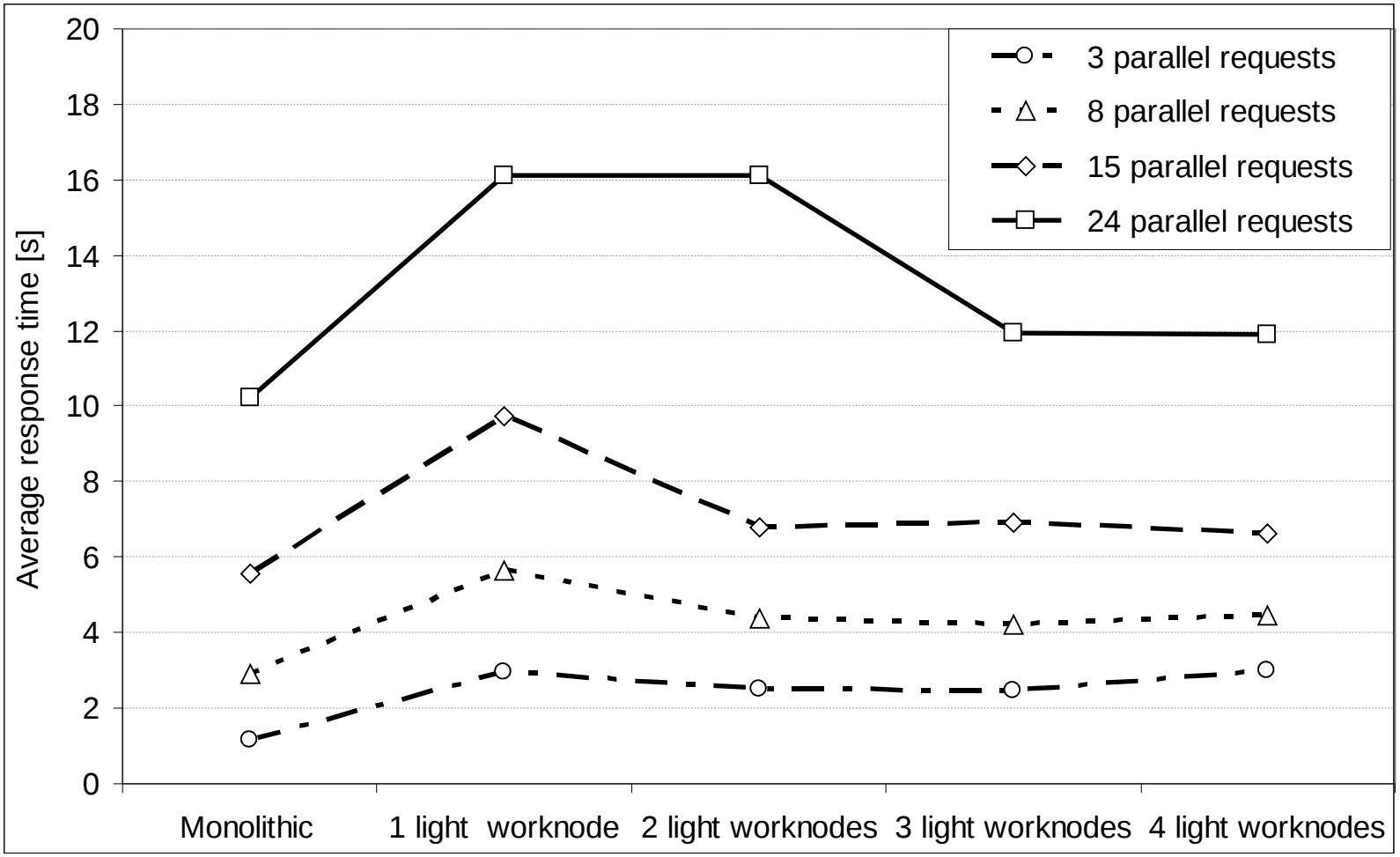

Push architecture

# Pull Architecture - parallelism




No. of instances of SS Distributed programs: 3

# Push Architecture - parallelism




No. of instances of SS Distributed programs: 10

# Conclusion

- Service-Oriented Programming Model
- Distributed Access Control System
- Run time reduction
  - pull architecture vs. monolithic architecture
    - 30 – 80% reduction in execution time
  - pull architecture vs. push architecture
    - 30 – 50% reduction in execution time