AMPol: Adaptive Messaging Policy

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Background
- Large scale distributed systems
  - Can not impose a uniform policy on all participants for ever-changing requirements
  - Based on fixed protocols and message format
  - Lack system adaptation

Approach
- Senders should learn and adapt to the policies of potential recipients
  - Policy Model: describe policies of interest
  - Policy Discovery: learn and merge such policies
  - Enforcement and Extension: Add capabilities and enforce

Policy Model
- Describes and regulates the adaptive actions of the entities in the messaging process
- Static policy: A policy framework for all message transfers
- Dynamic policy: A set of rules and constraints on a particular message transfer
- Adaptive Messaging Policy Language (AMPL)

Policy Discovery
- Policy Advertisement: publish static policies
  - Push & Pull mode
- Policy Merging: merge the propagated static policies to create the dynamic policy
- Policy Query Protocol: steps of querying, transferring published static policies, merged dynamic policies and messages
- Messaging Models
  - Basic Messaging
  - Four-Node Messaging

System Extension
- Mechanism by which Relevant nodes dynamically reconfigure or adapt themselves so that they can work properly in changing circumstances.
- Policy conformance: logic of conforming a message to a policy rule
- Policy enforcement: logic for enforcing a policy rule
- System Extension: load and execute the plug and play processes

Case Study
- Based on WSEmail messaging system
- Policy-based Puzzle Anti-Spam
- Identity Based Encryption

Enforcement and Extension
- Policy Conformance
- Dynamic Policy
- System Extension

Contribution & Future Work
- Contribution
  - Flexible and integrated messaging system based on adaptive messaging policy
  - Architecture, model, prototype validate concept
- Future Work
  - Support for multiple recipients
  - Sophisticated policy negotiation
  - Improved security measures

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