Authorization for Constrained RESTful Environments (ACRE)

draft-seitz-ace-core-authz-00

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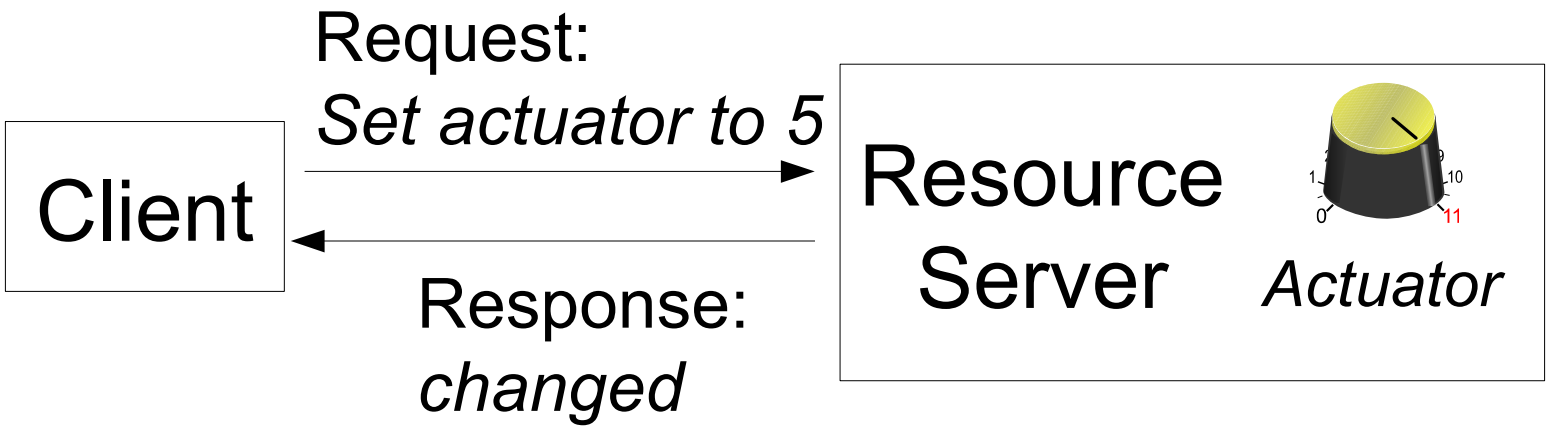
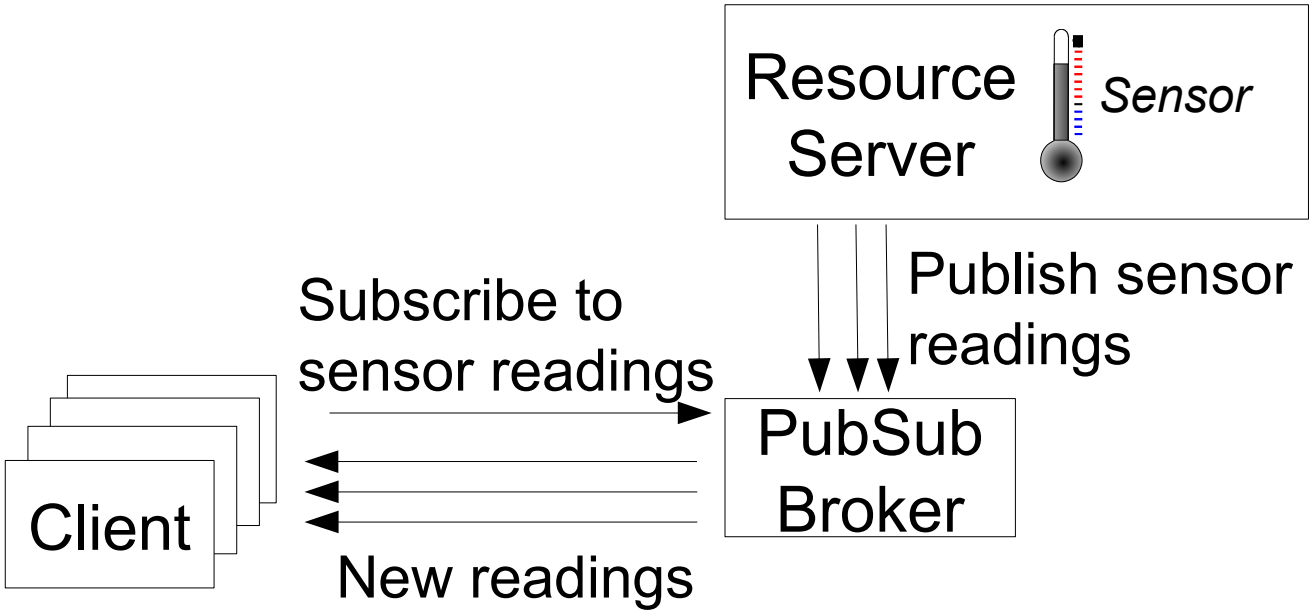
IETF ACE WG meeting
July 22, 2015

Example A:
Access to an Actuator



- RS needs to know C is authorized
- C needs to know that the response is from RS
- Integrity and replay protection for Request/Response
- Possibly encryption for Request/Response

Example B: Multiple devices accessing Sensor Data



- Access to sensor readings must be controlled
- Clients need to be able to verify the origin of a sensor reading and to detect replay
- Other example: Access to wireless sensor network data behind application layer gateway

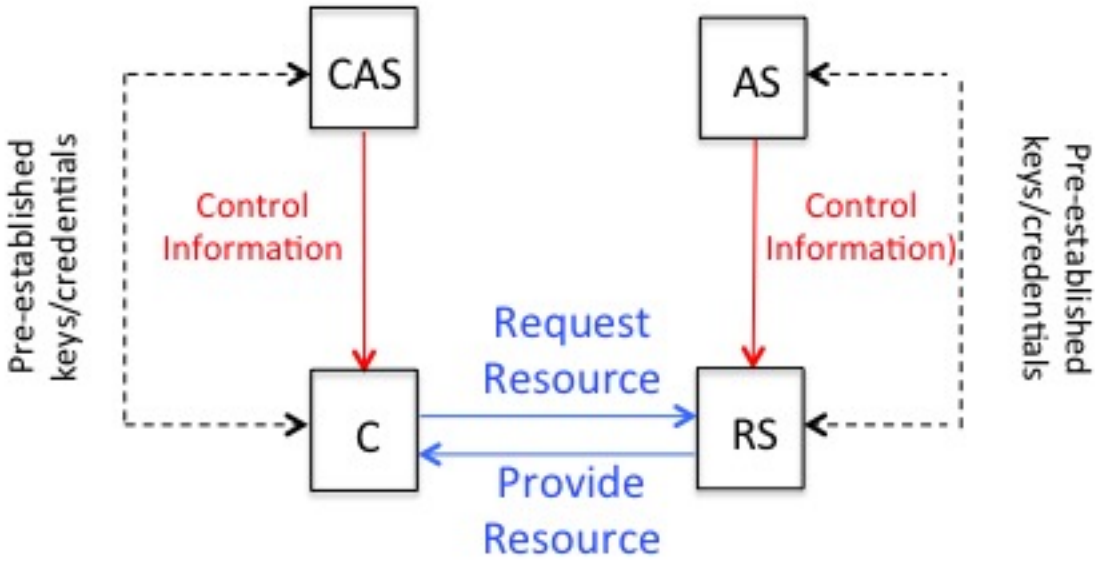
This draft

- Covers additional use cases
  - Supports multiple authorization schemes
  - End-to-end security with intermediaries
  - DTLS or COSE for protecting information flows
  - Using REST
- Is inspired by existing work
  - draft-selander-core-access-control
  - draft-gerdes-ace-dcaf-authorize
  - draft-bormann-core-ace-aif
  - OSCAR (object security architecture for IoT)

ACE Architecture and Information Flows

Legend:

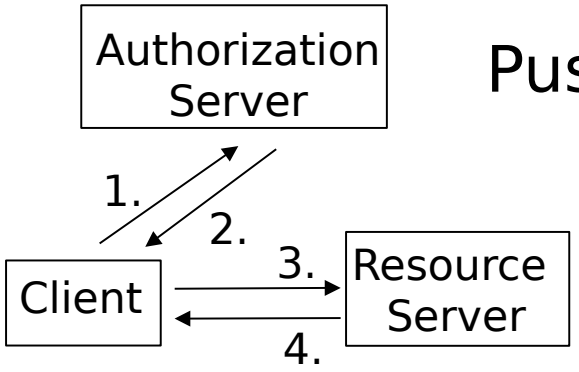
- Black boxes represent functions
  - Functions may be combined in one node
- Information flows in solid lines
  - Resource access (based on CoAP)
  - Control information (authorization information, keys, etc.)
  - Information flow may pass intermediary nodes



Information flows may be protected with session-based security (DTLS) or data object based security (COSE)

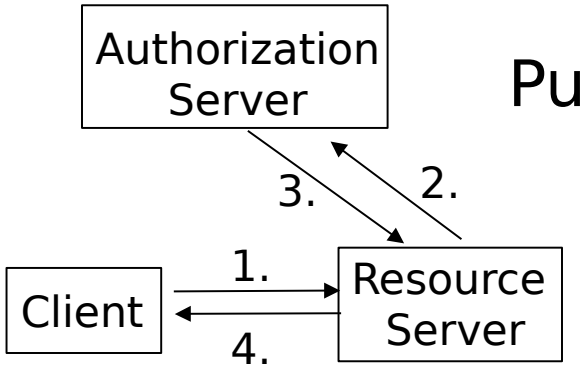
Source: draft-gerdes-ace-actors

Authorization Schemes



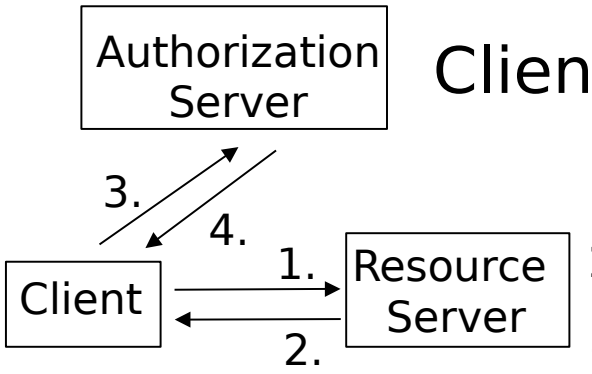
Push

1. AuthZ request
2. AuthZ token
3. Token & Request
4. Response



Pull

1. Request
2. AuthZ request
3. AuthZ decision
4. Response



Client-Pull

1. GET Request
2. Protected resource Representation
3. AuthZ request
4. Access keys

RESTful Authorization Resources

- C or RS → AS: Authorization Request
  - POST request to authorization resource at AS
- C → RS: Authorization Info
  - POST authorization information to authorization resource at RS
- Different authorization schemes re-use the same RESTful building blocks
- Need to define discovery mechanisms
  - How about */.well-known/authorize* ?
  - rt for Resource Directory ?

ACRE Design Principles

1. Allow security at different layers
   - Session-based security or object security for each information flow depending on use case
2. Allow different authorization schemes
   - Requires support for different order of information flow
3. Use REST
   - Authorization information as RESTful resources

Thank you!

Questions/comments?