

ACE Use Cases

draft-ietf-ace-usecases-03

Ludwig Seitz, Stefanie Gerdes, **Sandeep Kumar**

IETF-92, ACE Meeting, 2015-03-24

Focus

- ▶ Illustrate the kind of authorization problems we are trying to solve in ACE.
- ▶ Focus on user/owner perspective.
- ▶ Scenario sections for each use case point out representative problems.
- ▶ Requirements are not in scope.
- ▶ Security Considerations section provides recommendations for solution designers.
- ▶ RESTful architecture style.

Use Cases

- ▶ Container Monitoring
- ▶ Home Automation
- ▶ Personal Health Monitoring
- ▶ Building Automation
- ▶ Smart Metering
- ▶ Sports and Entertainment
- ▶ Industrial Control Systems

Scenarios

- ▶ Monitoring and cooling of bananas during transport of containers.
- ▶ Home Automation
 - ▶ Controlling a smart home infrastructure.
 - ▶ Configuration of authorization policies for new devices.
 - ▶ Remotely letting in a visitor (Spontaneously granting authorizations).
- ▶ Personal Health Monitoring: Controlling a heart rate monitor.
- ▶ Building Automation
 - ▶ Installation and Commissioning: Rollout of lighting system.
 - ▶ Operational: Normal operation.
 - ▶ Maintenance: Change the configuration of devices.
 - ▶ Decommissioning: Removing devices from the network.

Scenarios (2)

- ▶ Smart Metering
 - ▶ Drive-by Metering: Collect metering data using mobile base-stations.
 - ▶ Meshed Topologies: Metering data is transferred using nodes that belong to other owners.
 - ▶ Advanced Metering Infrastructure: Storing and forwarding of metering data.
- ▶ Sports and Entertainment: Dynamically connecting smart sports equipment of different owners.
- ▶ Industrial Control System: Controlling an oil platform.

Summary of Authorization-Related Problems

- ▶ Users/Owners want to grant different authorizations to different parties.
- ▶ The participating parties may have different (possibly diverging) security objectives.
- ▶ Absent user: Devices need to be enabled to enforce authorization policies without human intervention at the time of the access request.
- ▶ Devices might not be able to access servers in the Internet at the time of the access request.
- ▶ Messages between endpoints might need to be forwarded over multiple hops.
- ▶ It might be difficult to manually re-provision individual devices if authorization policies change.

Home Use

- ▶ Administrators in home scenarios (home automation, personal health monitoring, sport and entertainment) might have no technical skills.
- ▶ Usability is especially important.
- ▶ Configuration needs to be easy and require little effort.
- ▶ Devices should – where possible – fulfill their purpose seamlessly and often even unnoticeably)
- ▶ Privacy is especially important.

Lifecycle

- ▶ Commissioning: Configure authorization policies for new devices.
- ▶ Operation: Most of the described problems.
- ▶ Maintenance: Revoking / changing access permissions.
- ▶ Decommissioning: Revoke access permissions for a device.

How to proceed?

- ▶ Are the main use cases / scenarios for ACE covered?
- ▶ Are the main authorization problems covered that users/owners have?
- ▶ Are we now ready to ship it?