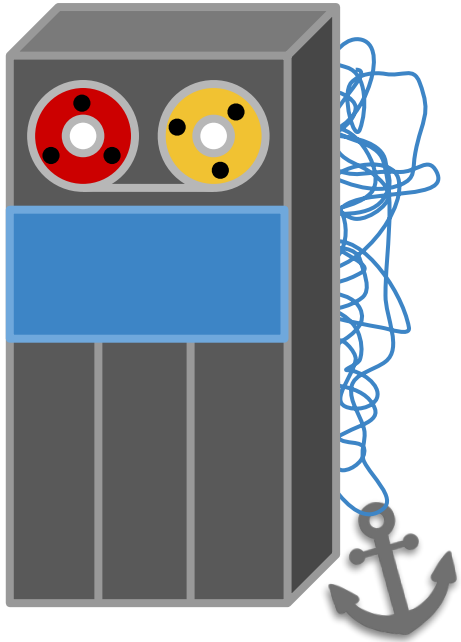
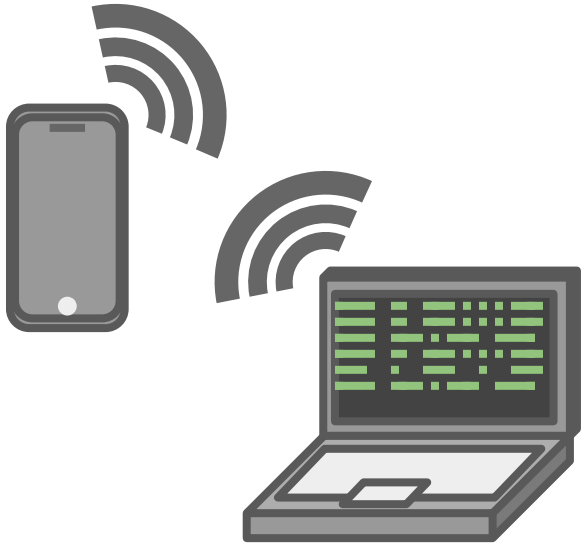
SROS2 Demos





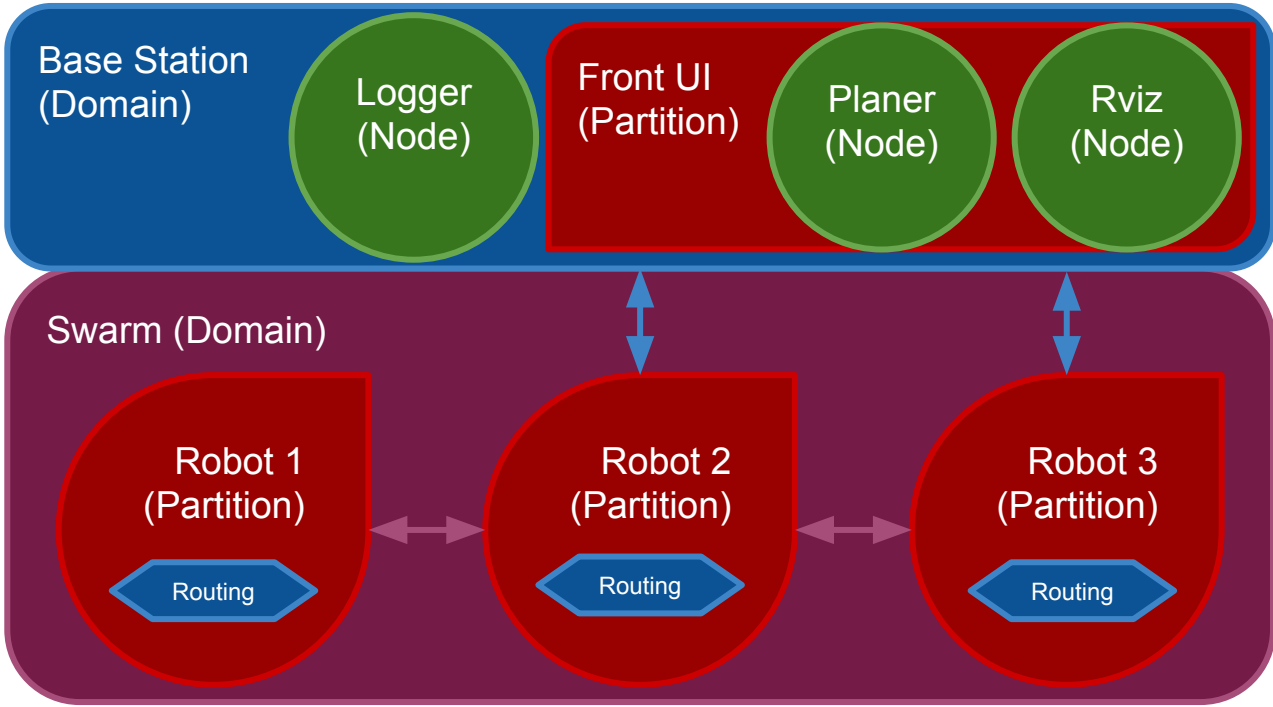
Overview

- References
  - Related IROS 2018 publications
  - Design of ComArmor & Keymint
- Comarmor
  - An extensible access control language
  - Write succinct, expressive policy profiles
- Keymint
  - Meta build tool for security artifacts
  - Automated generation and signing of PKI
- Demos
  - Hands on examples using SROS2
  - Deploying SROS2 onto the Turtlebot 3

Procedurally Provisioned Access Control for Robotic Systems

- Verifiable policies
  - Static analysis
- Automated tooling
  - Security at scale
- See lighting talk and paper
  - https://youtu.be/OzPgkhH139g

R. White, G. Caiazza, H. Christensen, and A. Cortesi, “Procedurally provisioned access control for robotic systems,” Intelligent Robots and Systems (IROS), 2018 IEEE/RSJ International Conference, 2018.



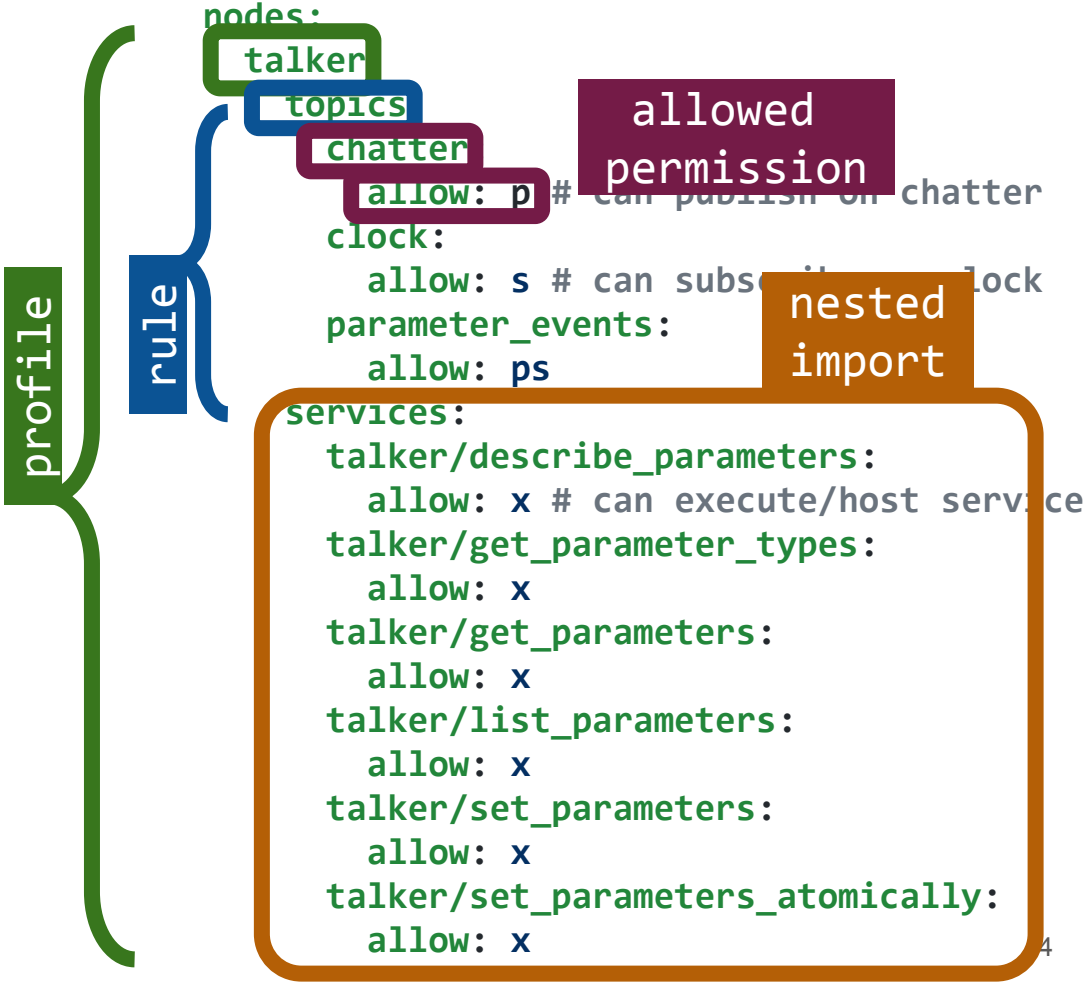
Current yaml Profile Policy

Profiles are Attached to subjects via URI (*Namespace*)

Attachment is an expression used to match a URI

Profiles are composed of object access Rules or nested profiles

Rules specify object type, attachment, and permissions the policy allows or denies



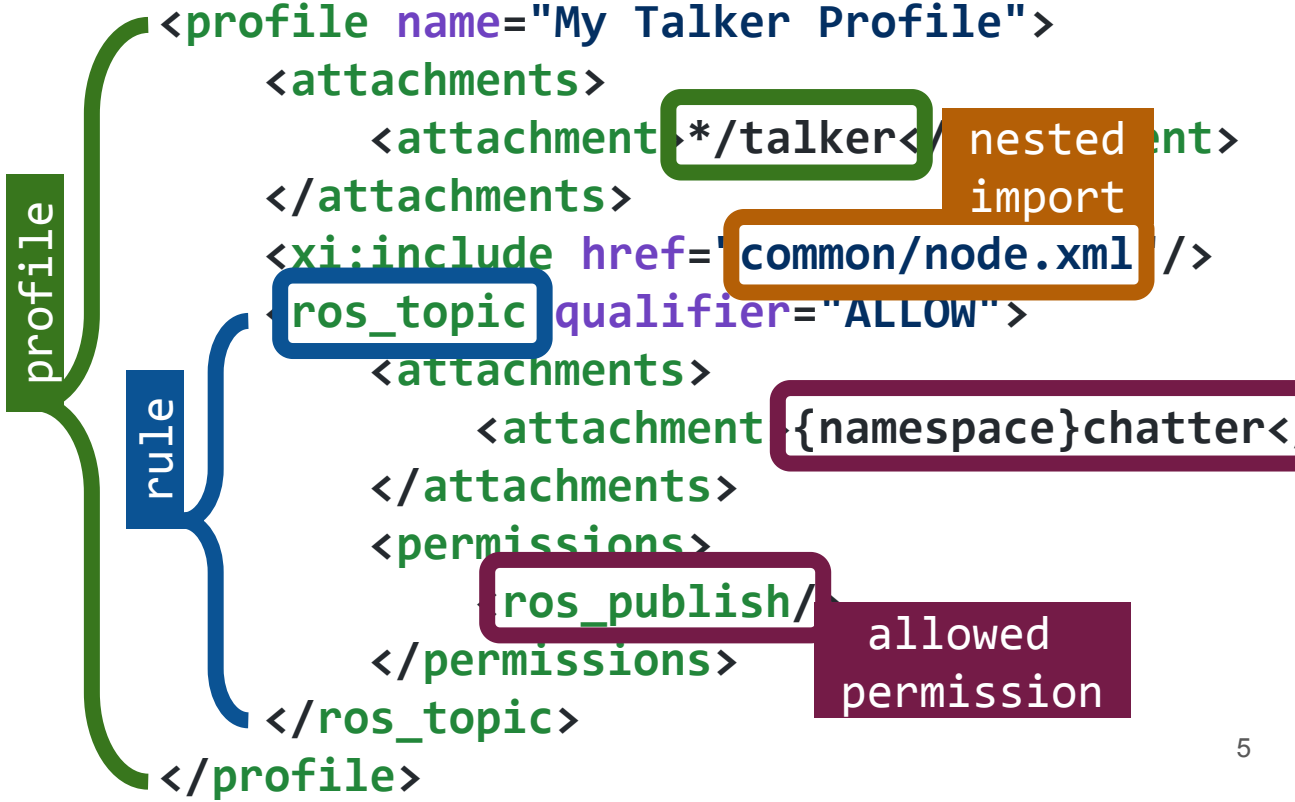
Alternative ComArmor Profile Policy

Profiles are Attached to subjects via URI (*Namespace*)

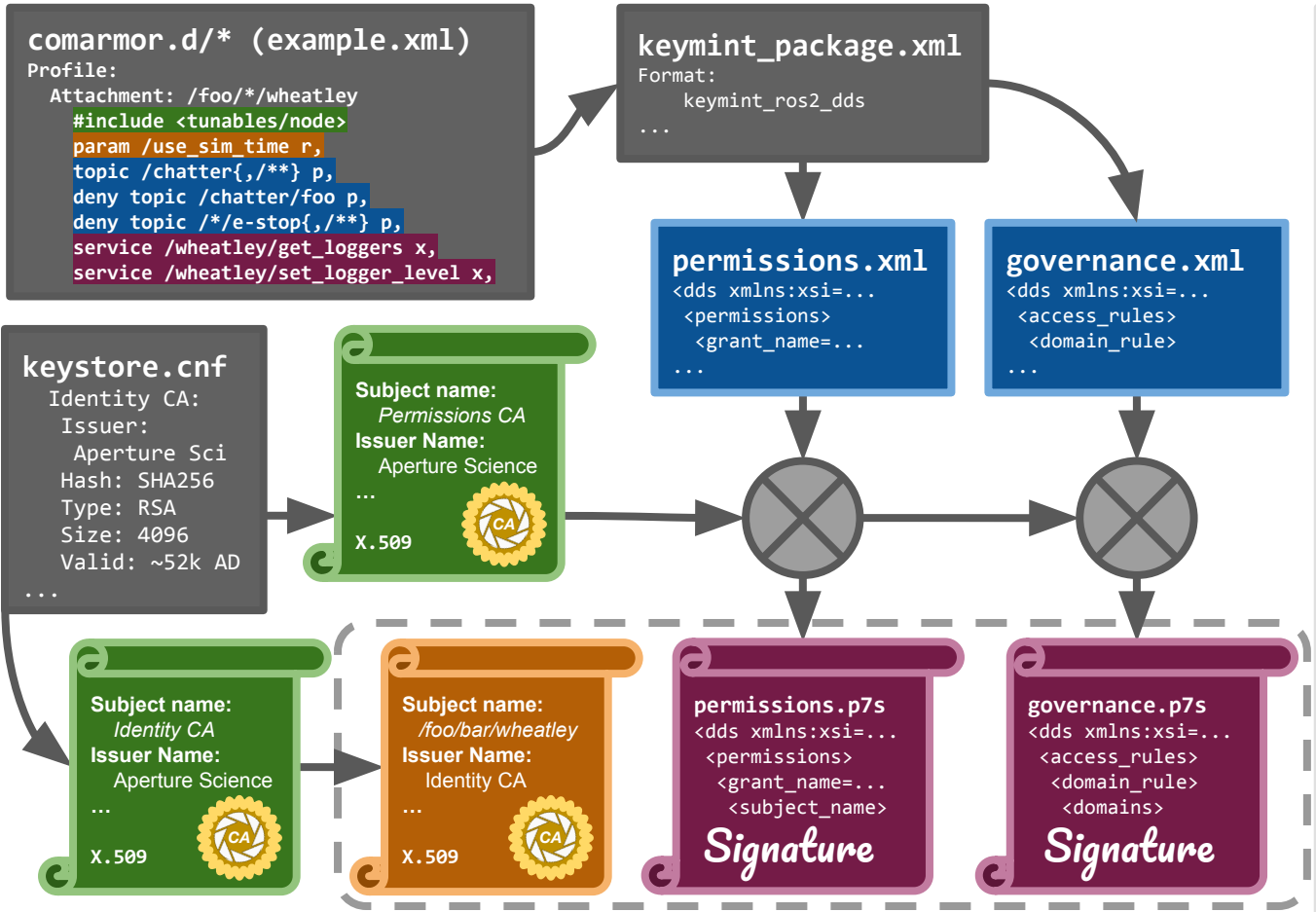
Attachment is an expression used to match a URI

Profiles are composed of object access Rules or nested profiles

Rules specify object type, attachment, and permissions the policy allows or denies



Keymint: automated cryptographic build tool




```
$ keymint create "/foo/bar/wheatley"
$ keymint build src/foo/bar/wheatley
$ keymint install build/foo/bar/wheatley
$ tree keymint_ws/
keymint_ws/
├── build/foo/bar
│   └── wheatley
│       ├── csr.pem
│       ├── key.pem
│       ├── permissions.xml
│       └── governance.xml
├── install/foo/bar
│   └── wheatley
│       ├── cert.pem
│       ├── key.pem
│       ├── permissions.p7s
│       └── governance.p7s
├── src/foo/bar
│   └── wheatley
│       └── keymint_package.xml
├── private
│   ├── identity.key.pem
│   └── permissions.key.pem
├── profile
│   ├── comarmor.d
│   │   ├── example.xml
│   │   └── ...
│   └── keystore.cnf
└── public
    ├── identity.cert.pem
    └── permissions.cert.pem
```

Demos

Using docker to quickly reproduce the secure talker and listener example from the previous section.

- Demos
  - github.com/ruffsl/ros2_docker_demos

Using ComArmor and Keymint to deploy SROS2 to a more elaborate robotic application stack

- Turtlebot3 Example:
  - github.com/ruffsl/IROS2018_SROS2_Tutorial