Authorization in Spring Security

Permissions, roles and beyond

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Spring Security: Architecture Principles

Spring I/O 2024! On youtube!

Spring Security Authorization

1. 🌿 A demo app
2. 🛠️ Spring Security's authz tooling
    1. Request-level
    2. Method-level
    3. Object-level
3. 🧠 Authorization design
    1. Thinking about authorization
    2. Information is key

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A demo app

You've done this before! Either request-level or method-level security.

Separation of concerns: avoid security-related code in your domain code

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Request-level authorizarion

```
http.authorizeHttpRequests(auth → { /* ... */ });
```

Simple rules:

- `.permitAll()`, `.denyAll()`, `.authenticated()`,...
- `.hasRole()`, `.hasAuthority()`,...

Request-level authorizarion

For more interesting rules:

```
.access((authSupplier, reqContext) → { /* ... */ });
```

Composability:

```
.access(AuthorizationManagers.anyOf( ... ))
```

⚠ Does not read the body of the request

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Method-level authorizarion

`@PreAuthorize( ... )`, `@PostAuthorize( ... )`, `@PostFilter( ... )` with SpEL expressions.

Avoid complex expressions, and use a bean reference:
`@PreAuthorize("@authzService.authorize( ... )")`

Consider custom annotations for de-duplication:
`@AllowedDomains(domains = { "corp.example.com" })`

Method-level authorizarion

Even with `@PostAuthorize( ... )` or `@PostFilter( ... )`
DO filter in your database / service, e.g.:
`SELECT ... WHERE owner.id == authenticationId`

Enforce separation of concerns with
`@HandleAuthorizationDenied(handlerClass = ... )`

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Object-level authorization

You can apply security to object methods.

Annotate call site with `@AuthorizeReturnObject` to create a proxy and enforce those methods.

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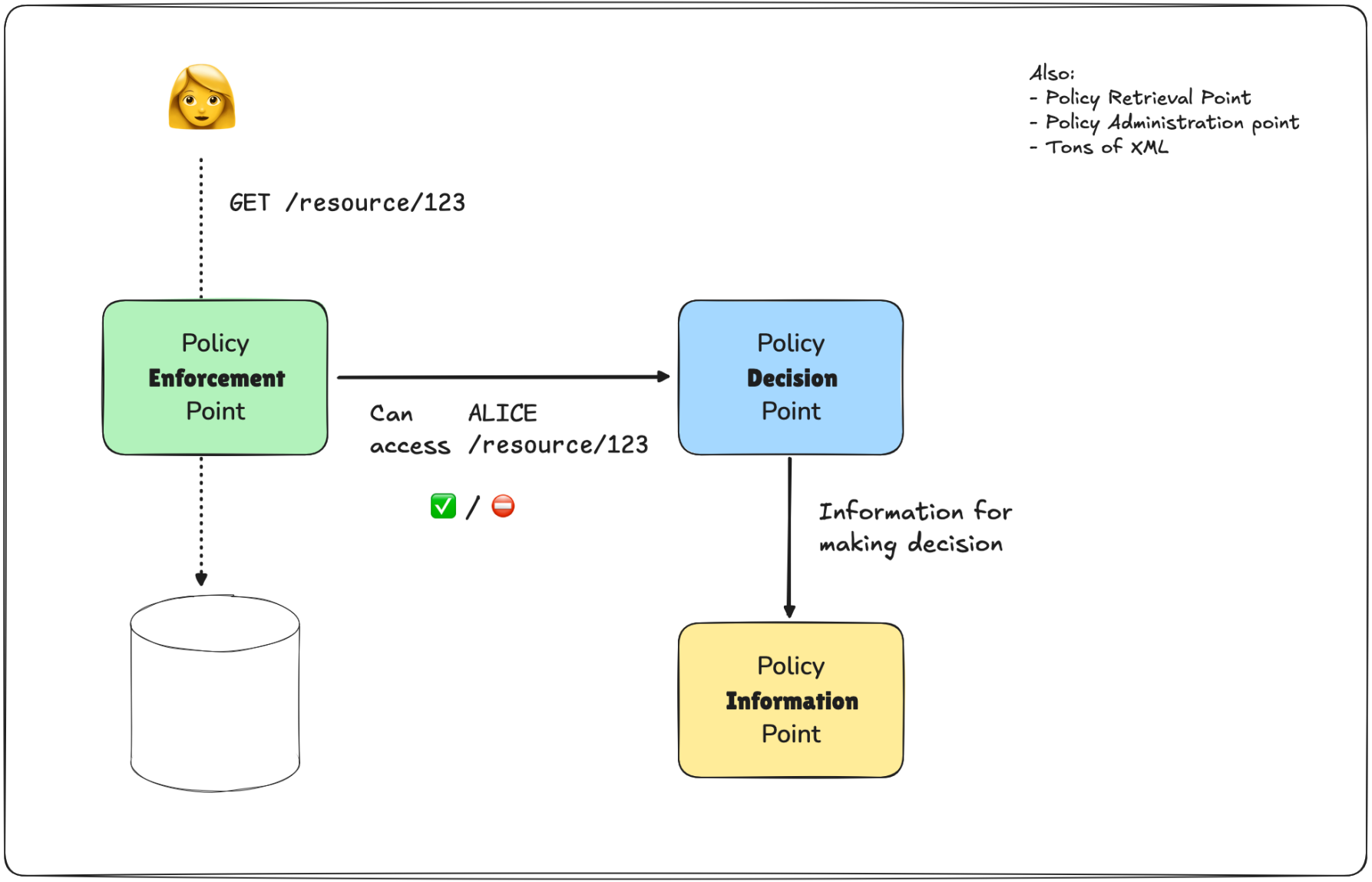
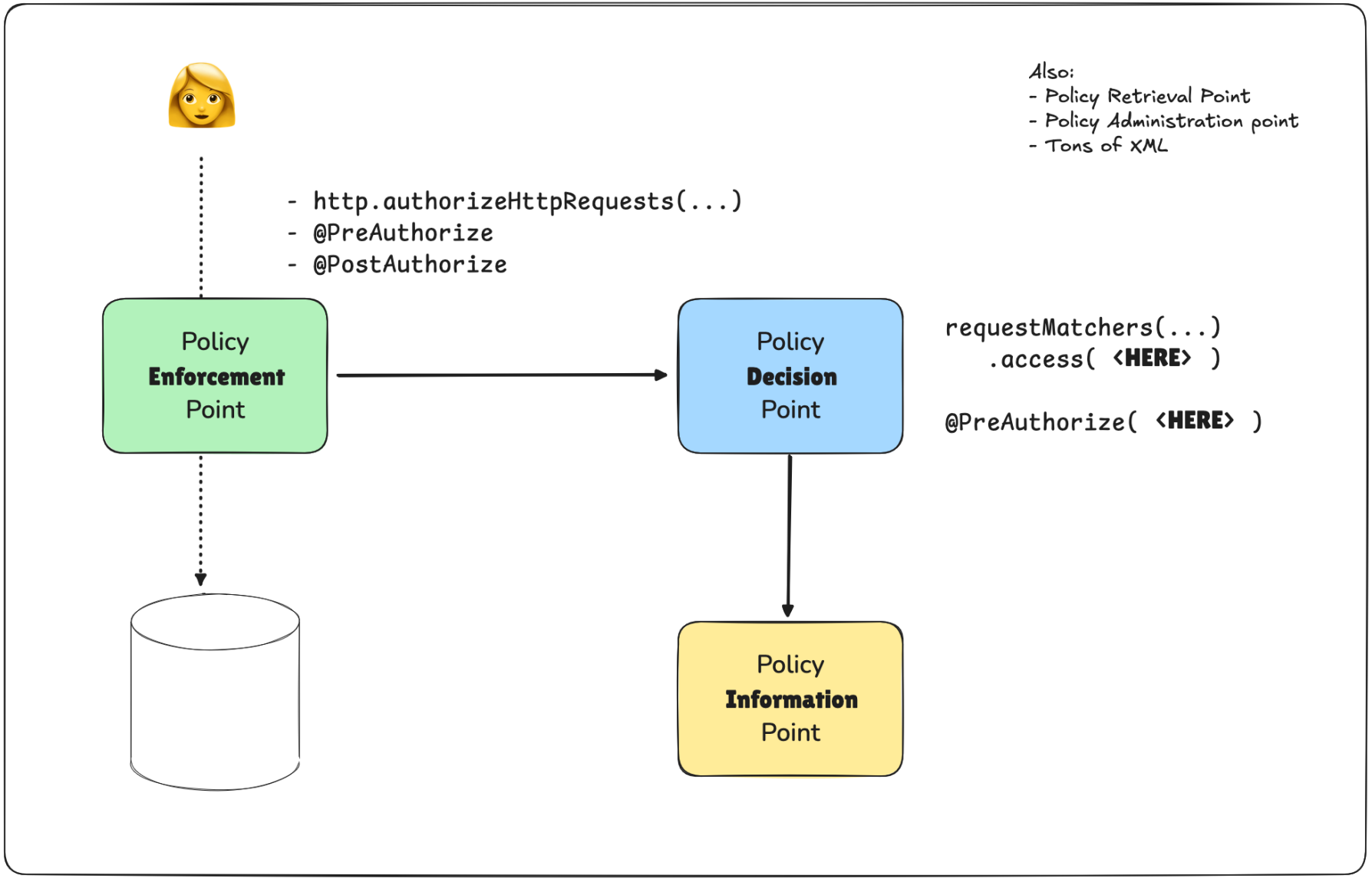
Thinking about authorization

Remember XACML?


Also:
- Policy Retrieval Point
- Policy Administration point
- Tons of XML
GET /resource/123
Policy
Enforcement
Point
Can ALICE
access /resource/123
✅ / ⛔
Policy
Decision
Point
Information for
making decision
Policy
Information
Point


Also:
- Policy Retrieval Point
- Policy Administration point
- Tons of XML
- http.authorizeHttpRequests(...)
- @PreAuthorize
- @PostAuthorize
Policy Enforcement Point
Policy Decision Point
Policy Information Point
requestMatchers(...)
.access(<HERE>)
@PreAuthorize(<HERE>)

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Information is key

- What information is relevant for the security decision?
- Where can you capture or transform it?
- Consider:
  - `AuthenticationConverter` works on HttpServletRequest
  - `AuthenticationProvider` works on Authentication
  - `AuthenticationDetailsSource` also HttpServletRequest
  - Last resort: `Filter`

Information is key

Context matters!

Dedicated `SecurityFilterChain`s with different rules bring the complexity down:

- Simpler information gathering
- Simpler rules

PSA: Don't create 65 `SecurityFilterChain`s.

References

https://github.com/Kehrlann/spring-security-authorization

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Merci 😊
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