



**OBJECT
COMPUTING**
HOME TO MICRONAUT

WEBINAR

MICRONAUT MULTITENANCY

SERGIO DEL AMO

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Multi-Tenancy, as it relates to software development, is when a single instance of an application is used to service multiple clients (tenants) in a way that each tenants' data is isolated from the other.

INSTALLATION

MULTI-TENANCY INSTALLATION



```
build.gradle
dependencies {
    ...
    ..
    .
    compile: 'io.micronaut:micronaut-multitenancy'
}
```

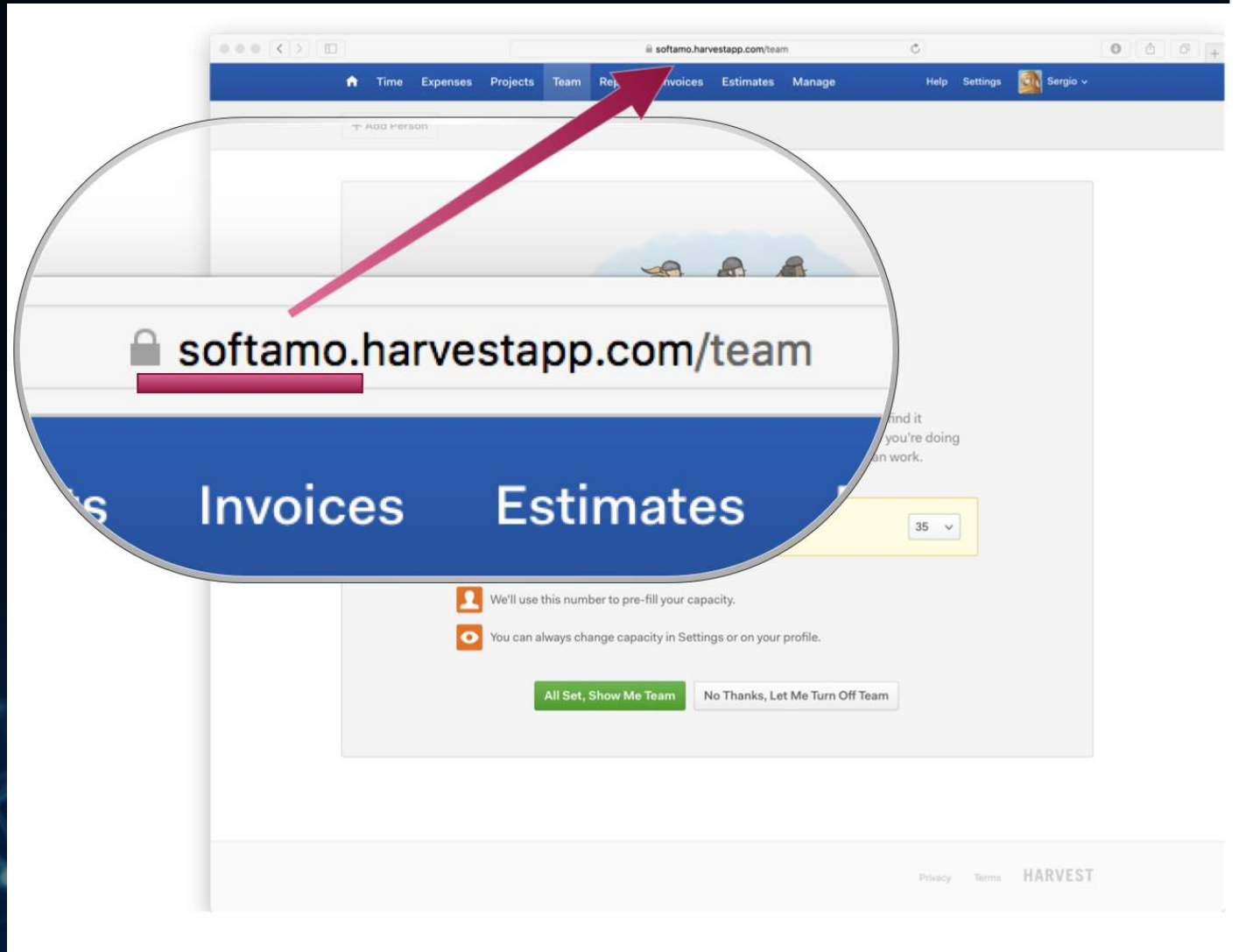


TENANT RESOLUTION

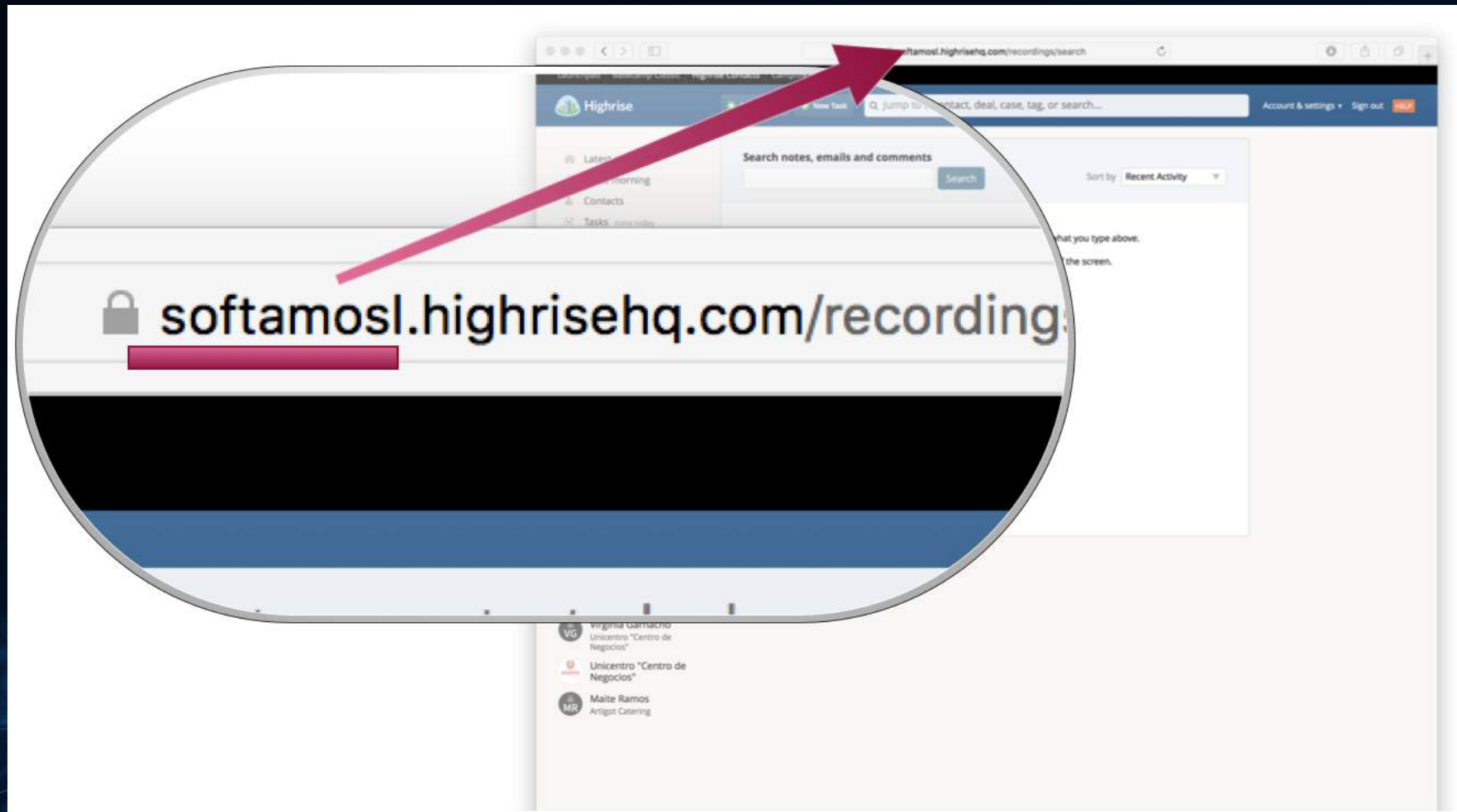
BUILT-IN TENANT RESOLVERS

Name	Description
Cookie Tenant Resolver	Resolves the current tenant from an HTTP Cookie
HttpHeaderTenantResolver	Resolves the current tenant from the request HTTP Header
PrincipalTenantResolver	Resolves the current tenant from the authenticated username.
Subdomain Tenant Resolver	Resolves the tenant id from the sub domain
SessionTenantResolver	Resolves the current tenant from the HTTP Session.

SUBDOMAIN TENANT RESOLUTION



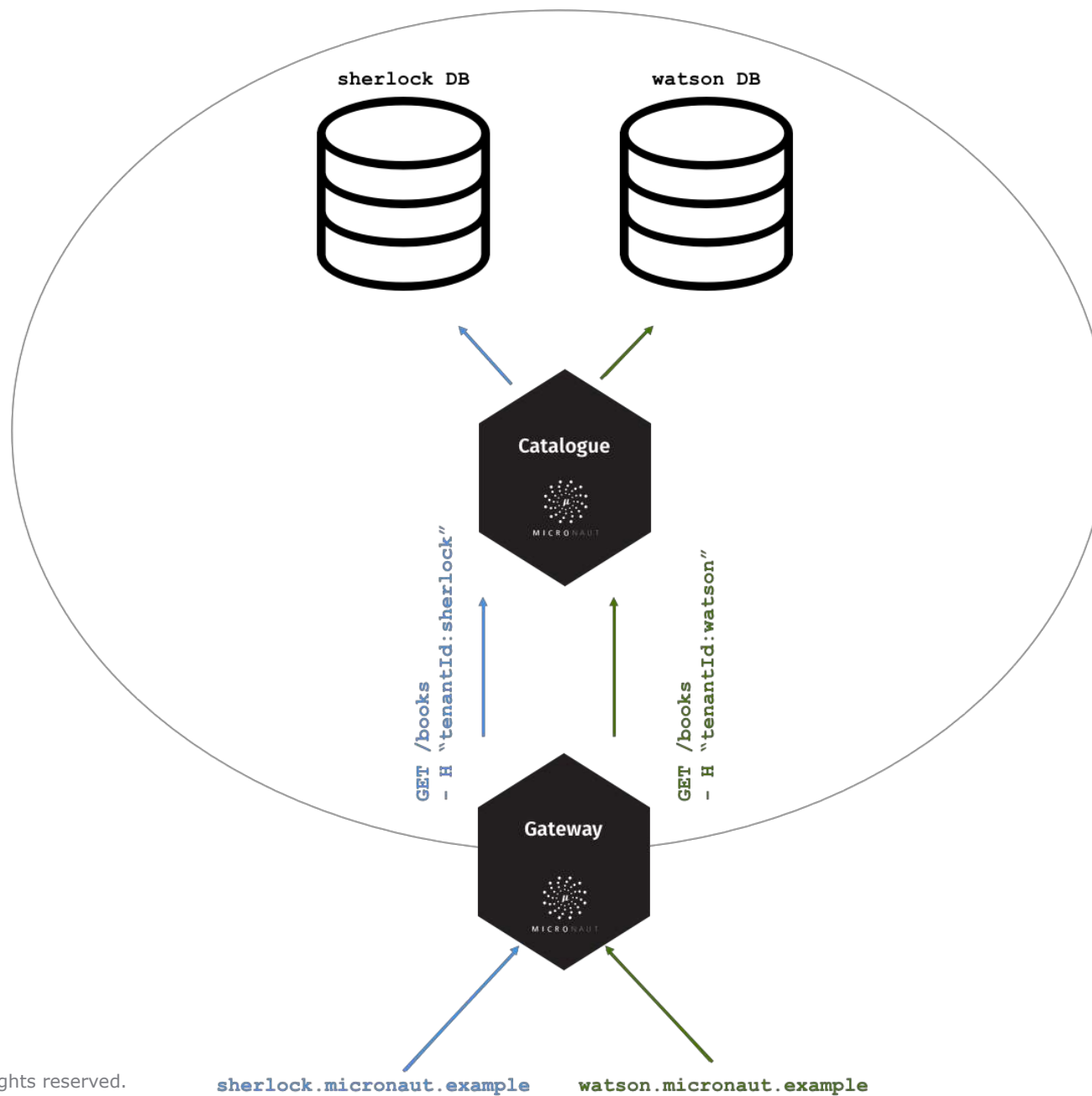
SUBDOMAIN TENANT RESOLUTION



BUILT-IN TENANT RESOLVER

Name	Description
SystemPropertyTenantResolver	Resolves the tenant id from a system property
FixedTenantResolver	Resolves against a fixed tenant id.

TENANT PROPAGATION



MULTI-TENANCY PROPAGATION



```
catalogue/src/main/resources/application.yml
micronaut:
  multitenancy:
    tenantresolver:
      httpheader:
        enabled: true
```

MULTI-TENANCY PROPAGATION



gateway/src/main/resources/application.yml

```
micronaut:
  multitenancy:
    propagation:
      enabled: true
      service-id-regex: 'catalogue'
  tenantresolver:
    subdomain:
      enabled: true
  tenantwriter:
    httpheader:
      enabled: true
```

DEMO

GORM MULTITENANCY

<https://gorm.grails.org/latest/hibernate/manual/index.html#multiTenancy>

GORM Multi-tenancy

- Configure Multitenancy Mode
- Configure Tenant Resolver
- Configure Domain classes which you want to be regarded as multi tenant.
- `User Tenants.*` or Multi-tenancy Transformations.

Multi-tenancy modes

Modes	Description
DATABASE	Separate database with a separate connection pool is used to store each tenants data.
SCHEMA	The same database, but different schemas are used to store each tenants' data.
DISCRIMINATOR	The same database is used with a discriminator used to partition and isolate data.

Multi-tenancy modes - Data isolation

Modes	Isolation
DATABASE	
SCHEMA	
DISCRIMINATOR	

MULTI-TENANCY PROPAGATION



src/main/resources/application.yml

```
grails:
  gorm:
    multiTenancy:
      mode: DATABASE
      tenantResolverClass: 'io.micronaut.multitenancy.gorm.HttpHeaderTenantResolver'
```

DOMAINS MULTI-TENANCY



```
@Entity
class Book implements MultiTenant<Book> {
    String title
}
```



DOMAINS - PARTITIONED MULTI-TENANCY



```
@Entity
class Book implements MultiTenant<Book> {
    String title
    String tenantId
}
```



DOMAINS - PARTITIONED MULTI-TENANCY



```
@Entity
class Book implements MultiTenant<Book> {
    String title
    String publisher
    static mapping = {
        tenantId name: 'publisher'
    }
}
```

Multi-tenancy transformations

Transformation	Description
@CurrentTenant	Resolve the current tenant for the context of a class or method
@Tenant	Use a specific tenant for the context of a class or method
@WithoutTenant	Execute logic without a specific tenant (using the default connection)

DOMAINS - PARTITIONED MULTI-TENANCY

```
import grails.gorm.multitenancy.*

// resolve the current tenant for every method
@CurrentTenant
@ReadOnly
class TeamService {

    // execute the countPlayers method without a tenant id
    @WithoutTenant
    int countPlayers() {
        Player.count()
    }

    // use the tenant id "another" for all GORM logic within the method
    @Tenant({"another"})
    List<Team> allTwoTeams() {
        Team.list()
    }

    List<Team> listTeams() {
        Team.list(max:10)
    }

    @Transactional
    void addTeam(String name) {
        new Team(name:name).save(flush:true)
    }
}
```



GORM DEMO

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