



Open Cloud Computing Interface

Platform and Application





Open Cloud Computing Interface

■ Specifications + API

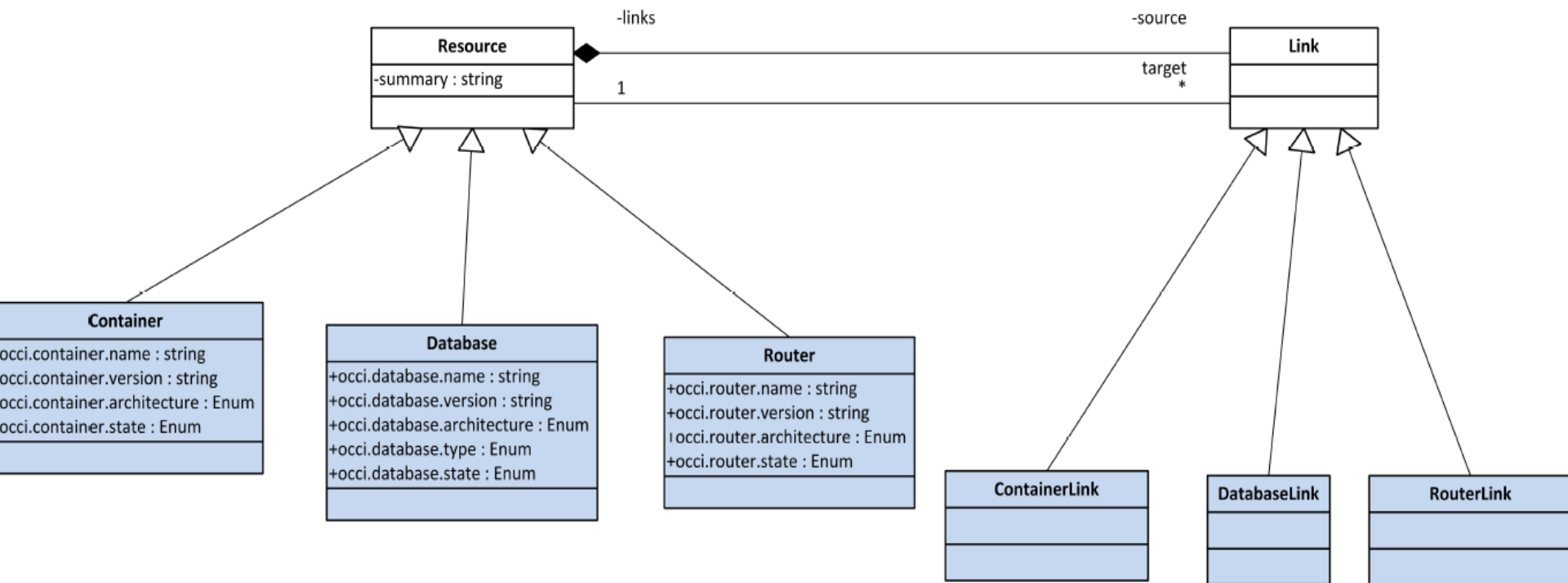
- Occi core,
- Occi infrastructure,
- Occi HTTP rendering.

Occi platform description model



Open-PaaS platform resources description model

■ OCCl platform extension





Open-PaaS platform resources description model

■ OCCl platform resources

- Container resource

Container
+occi.container.name : string +occi.container.version : string +occi.container.architecture : Enum +occi.container.state : Enum

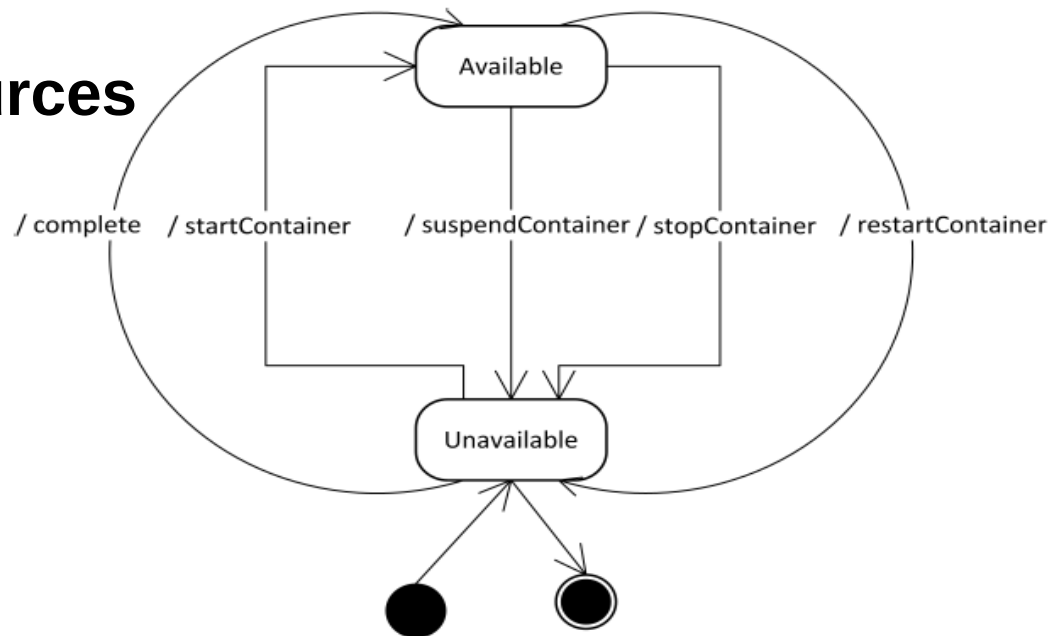
Attribute	Type	Multiplicity	Mutability	Description
occi.container.name	String	0..1	Mutable	Name of the instance.
occi.container.version	String	0..1	Mutable	Version label of the instance.
occi.container.architecture	Enum {x86, x64}	0..1	Mutable	CPU architecture of the instance.
occi.container.state	Enum {available, unavailable}	1	Immutable	Current state of the instance.



Unified resources description model

■ OCCl platform resources

- Container resource



Action Term	Target state	Attributes
StartContainer	Available	-
StopContainer	Unavailable	-
RestartContainer	Available	-
SuspendContainer	Unavailable	-



Unified resources description model

■ OCCl platform resources

- Database resource

Database
+occi.database.name : string
+occi.database.version : string
+occi.database.architecture : Enum
+occi.database.type : Enum
+occi.database.state : Enum

Attribute	Type	Multiplicity	Mutability	Description
occi.database.name	String	0...1	Mutable	Name of the instance.
occi.database.type	Enum {relational, KeyValue, document, graph}	0...1	Mutable	Scheme type of the instance.
occi.database.architecture	Enum {x86, x64}	0...1	Mutable	CPU architecture of the instance.
occi.database.version	String	0...1	Mutable	Version label of the instance.
occi.database.state	Enum {available, unavailable}	1	Immutable	Current state of the instance.

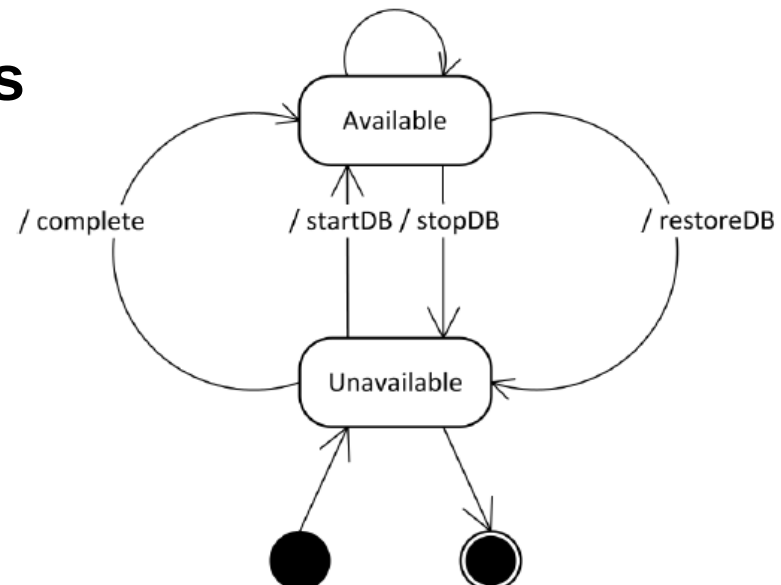


Unified resources description model

/ backupDB

■ OCCl platform resources

- Database resource



Action Term	Target state	Attributes
StartDB	Available	Database credentials
StopDB	Unavailable	-
RestartDB	Available (via stop and start chain)	Database credentials
BackupDB	None	-



Unified resources description model

■ OCCI platform resources

- Router resource

Router
+occi.router.name : string +occi.router.version : string +occi.router.architecture : Enum +occi.router.state : Enum

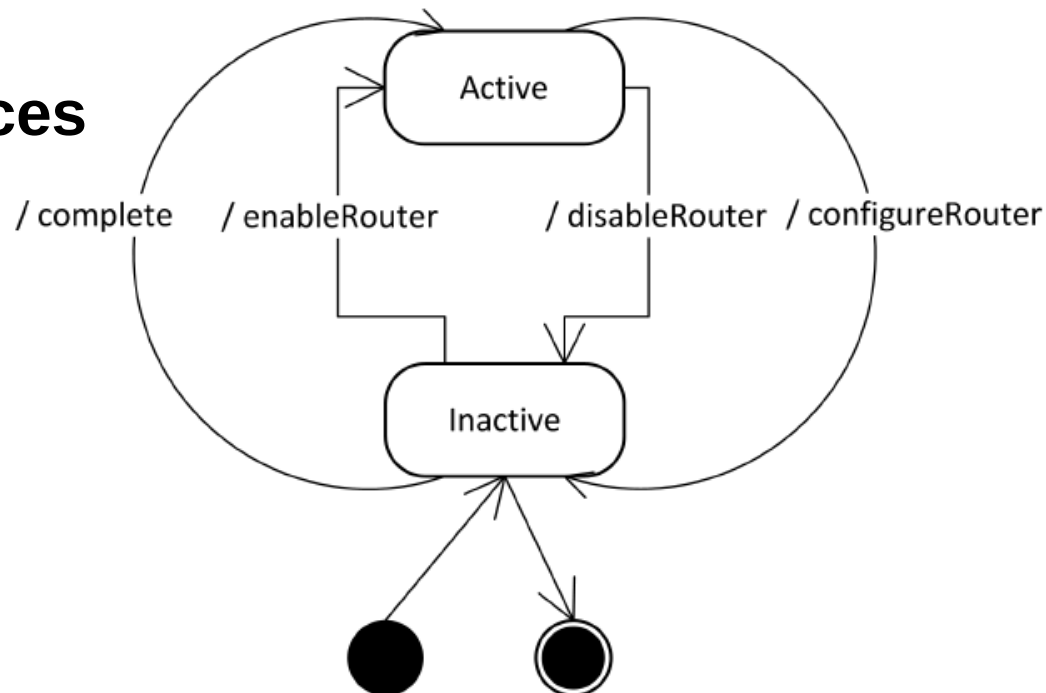
Attribute	Type	Multiplicity	Mutability	Description
occi.router.name	String	0..1	Mutable	Name of the instance.
occi.router.version	String	0..1	Mutable	Version label of the instance.
occi.router.architecture	Enum {x86, x64}	0..1	Mutable	CPU architecture of the instance.
occi.router.state	Enum {active, inactive}	1	Immutable	Current state of the instance.



Unified resources description model

■ OCCl platform resources

- Router resource



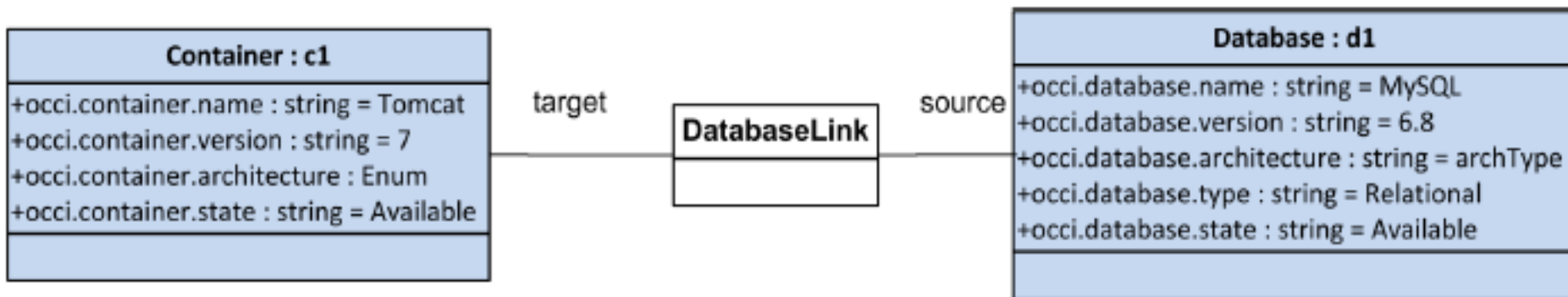
Action Term	Target state	Attributes
EnableRouter	Active	-
ConfigureRouter	None	-
DisableRouter	Inactive	-



Unified resources description model

■ OCCI platform links

- DatabaseLink

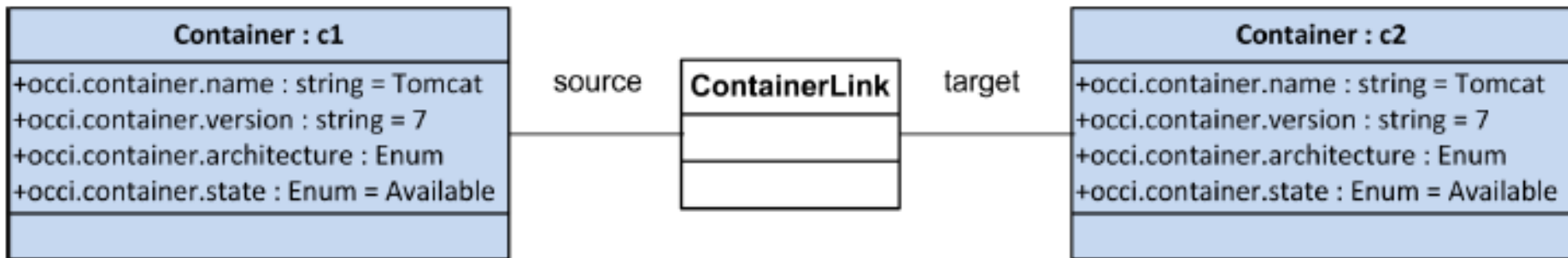




Unified resources description model

■ OCCI platform links

- ContainerLink

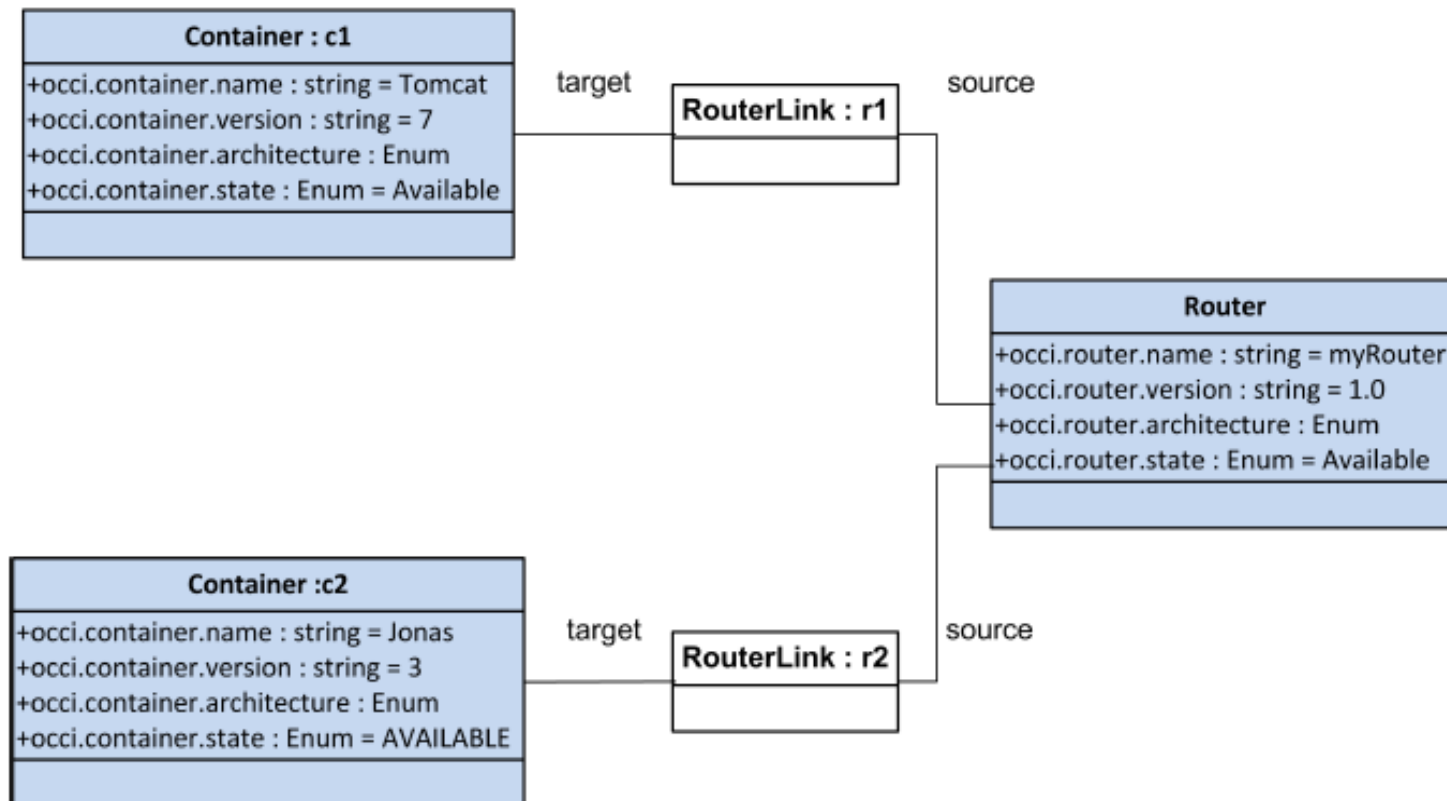




Unified resources description model

■ OCCI platform links

- RouterLink

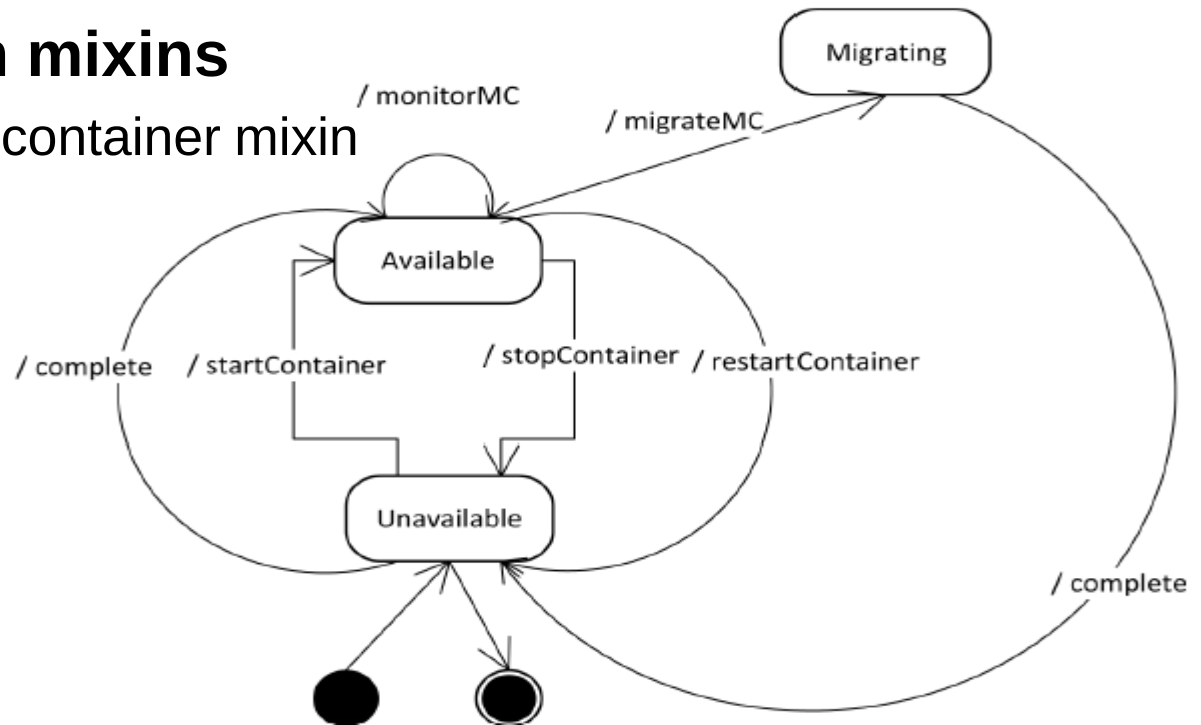




Unified resources description model

■ OCCI platform mixins

- Service micro-container mixin

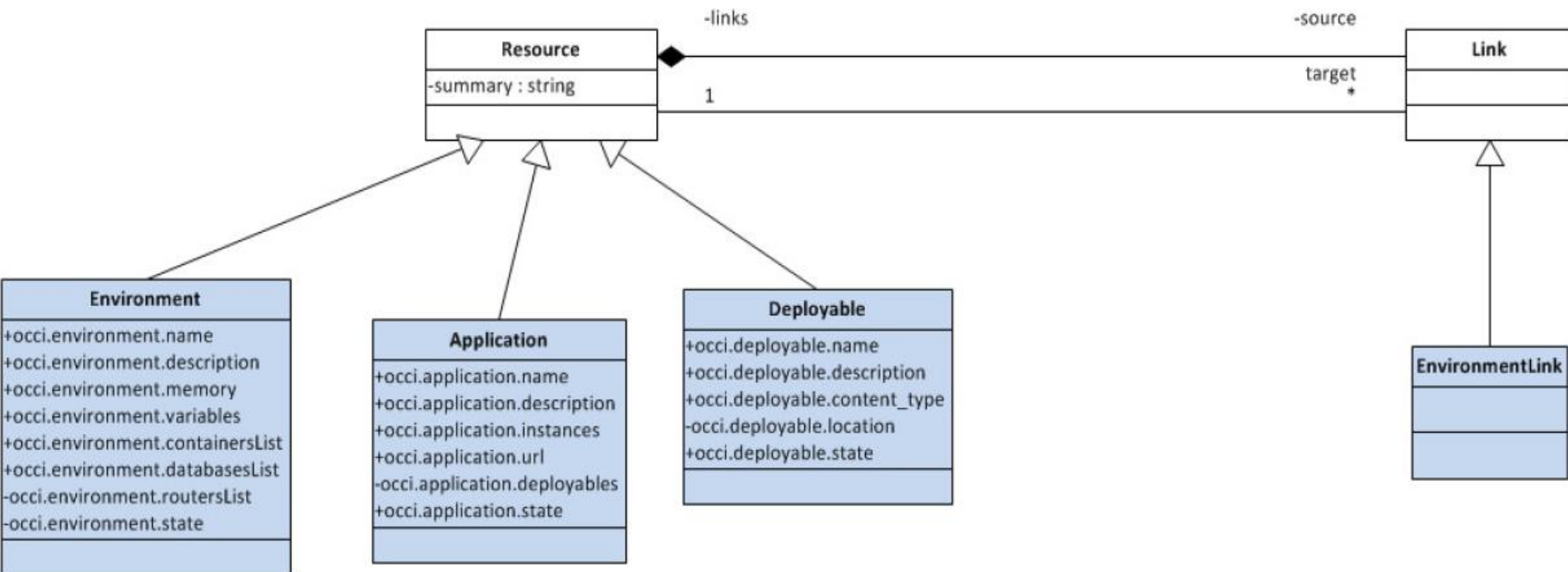


Action Term	Target state	Attributes
MonitorMC	None	-
MigrateMC	Available	-



Unified resources description model

■ OCCI application extension





Unified resources description model

■ OCCI application resources

- Environment resource

Action Term	Target state	Attributes
Update	None	new deployables

- Application resource

Action Term	Target state	Attributes
Update	None	new context
Start	started	-
Stop	stopped	-
Restart	started	-

- Deployable resource

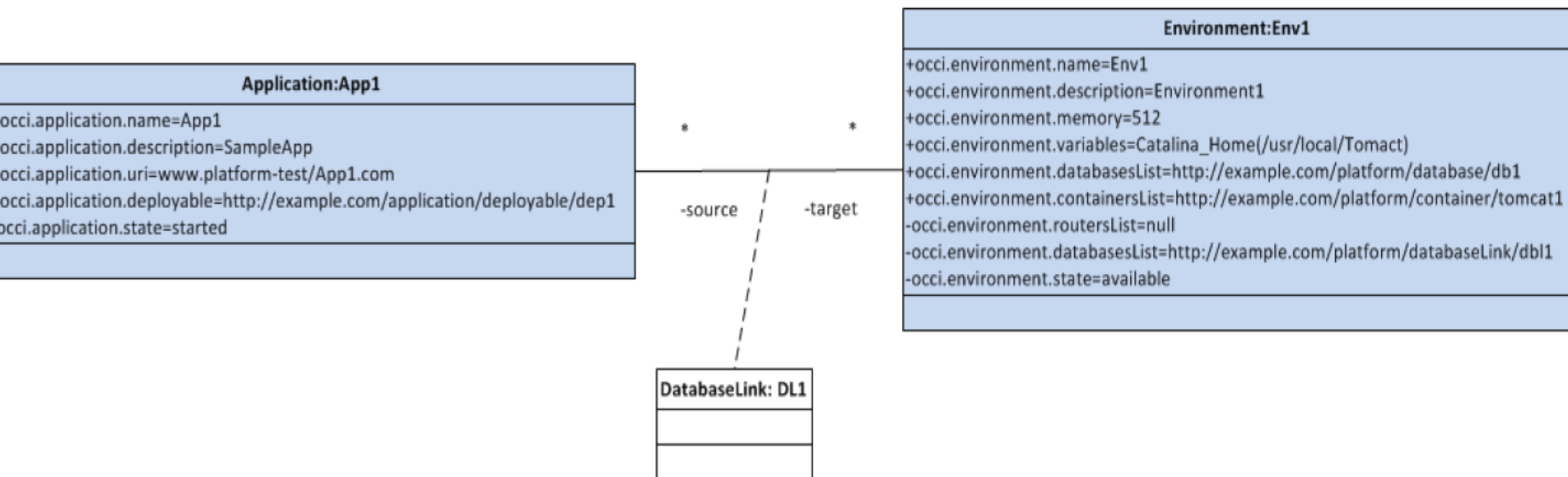
Action Term	Target state	Attributes
Update	None	new context



Unified resources description model

■ OCCl application links

- EnvironmentLink





PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create an Apache Tomcat instance

```
>POST http://localhost:8182/Container
HTTP/1.1
>[...]
```

```
>Category:Container;
>scheme=
"http://schemas.ogf.org/occi/platform#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...name="tomcat1"
>X-OCCE-Attribute:...version="7"
>X-OCCE-Attribute:...architecture="x64"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create a MySQL database instance

```
>POST http://localhost:8182/Database
HTTP/1.1
>[...]

>Category:Database;
>scheme=
"http://schemas.ogf.org/occi/platform#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...name="MySQL"
>X-OCCE-Attribute:...type="relationnal"
>X-OCCE-Attribute:...architecture="x64"
>X-OCCE-Attribute:...version="4.5"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create a DatabaseLink instance

```
>POST http://localhost:8182/DatabaseLink
HTTP/1.1
>[...]

>Category:DatabaseLink;
>scheme=
"http://schemas.ogf.org/occi/platform#";
>class=kind;
>Content-Type: text/occi
>X-OCCHI-Attribute:...source=
"http://example.com/container/tomcat1_UUID"
>X-OCCHI-Attribute:...target=
"http://example.com/database/MySQL_UUID"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create an Environment instance

```
>Category:Environment;  
>scheme=  
"http://schemas.ogf.org/occi/application#";  
>class=kind;  
>Content-Type: text/occi  
>X-OCCE-Attribute:...name="Env1"  
>X-OCCE-Attribute:...description="Env_1"  
>X-OCCE-Attribute:...variables=  
"Catalina_Home, usr/local/tomcat"  
>X-OCCE-Attribute:...containersList=  
"http://example.com/container/tomcat1_UUID"  
>X-OCCE-Attribute:...databasesList=  
"http://example.com/database/MySQL_UUID"  
>X-OCCE-Attribute:...databasesLink=  
"http://example.com/databaseLink/db1_UUID"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create a Deployable instance

```
>POST http://localhost:8182/Deployable
HTTP/1.1
>[...]
```

```
>Category:Deployable;
>scheme=
"http://schemas.ogf.org/occi/application#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...name= "Depl1"
>X-OCCE-Attribute:...description="Depl_1"
>X-OCCE-Attribute:...content_type="artifact"
>X-OCCE-Attribute:...location="\home"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create an Application instance

```
>POST http://localhost:8182/Application
HTTP/1.1
>[...]

>Category:Application;
>scheme=
"http://schemas.ogf.org/occi/application#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...name="SampleServlet"
>X-OCCE-Attribute:...description="app"
>X-OCCE-Attribute:...instances="2"
>X-OCCE-Attribute:...url=""
>X-OCCE-Attribute:...deployables=
"http://example.com/deployable/dep_UUID"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Create an EnvironmentLink instance

```
>POST http://localhost:8182/EnvironmentLink
HTTP/1.1
>[...]
```

```
>Category:EnvironmentLink;
>scheme=
"http://schemas.ogf.org/occi/application#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...source=
http://example.com/application/app_UUID
>X-OCCE-Attribute:...target=
http://example.com/environment/env_UUID
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Start the Application instance

```
>POST
http://example.com/application/app_UUID?
action=start
HTTP/1.1
>[...]

>Category:Application;
>scheme=
"http://schemas.ogf.org/occi/application#";
>class=kind;
>Content-Type: text/occi
>X-OCCE-Attribute:...name="SampleServlet"
>X-OCCE-Attribute:...description="app"
>X-OCCE-Attribute:...instances="2"
>X-OCCE-Attribute:...url=""
>X-OCCE-Attribute:...deployables=
"http://example.com/deployable/dep_UUID"
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Check the Application instance

```
> GET  
http://example.com/application/app_UUID  
HTTP/1.1  
> [...]
```



PaaS-independent resource provisioning mechanisms

■ Use case : *SampleServlet* deployment

- Check the Application instance

```
<[...]  
<Category: Application;  
scheme=  
"http://schemas.ogf.org/occi/application#";  
class="kind";  
>X-OCCT-Attribute:...name="SampleServlet"  
>X-OCCT-Attribute:...description="app"  
>X-OCCT-Attribute:...instances="2"  
>X-OCCT-Attribute:...application.url=  
"http://example.com/application/app_UUID"  
>X-OCCT-Attribute:...deployables=  
"http://example.com/deployable/depl1_UUID"  
  
< Link: [...]
```