

Tizen/Artik IoT Lecture Chapter 9. IoTivity Scene Manager

Sungkyunkwan University

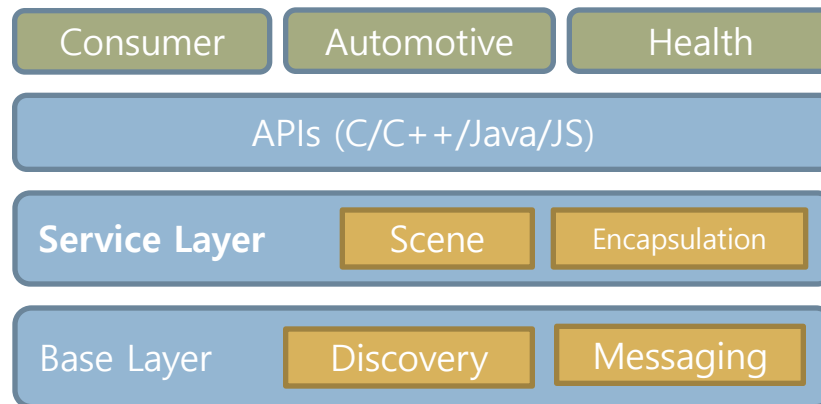
- **Scene Manager**
 - Resource Model
 - Architecture
- **Operations**
 - Check Support for Scenes
 - Create a Scene
 - Interact with Scenes
 - Delete a Scene
- **Classes**
 - Local Operation
 - Remote Operation

Scene Manager in Service Layer

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- **It provides a common set of functionalities to application development**
- **Designed to provide easy and scalable access to applications and resources**
- **IoTivity Services**
 - Resource Encapsulation
 - Resource Container
 - Scene Manager
 - Resource Hosting
 - Resource Directory
 - Easy Setup
 - Notification



Scene Manager

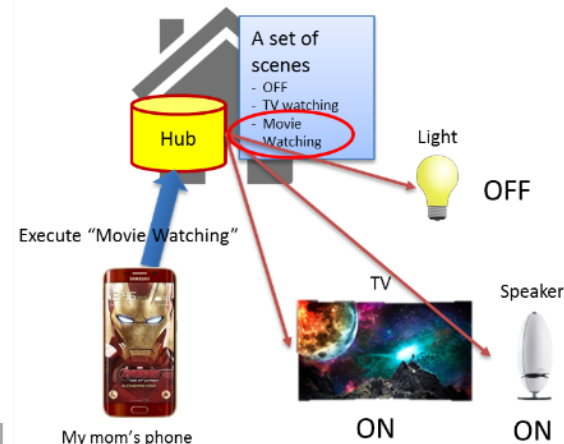
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- **IoTivity 1.1.0 New Feature**
- **Scene**
 - **Bundled user settings**
 - Provide a mechanism to **store a setting over multiple OIC resources** that may be hosted by multiple separate OIC servers
 - Users easily change the resources to configured representations
- **Use Case (Remote device : hub)**

Settings	Light	TV	Speaker
Off	False	False	False
TV watching	True	True	False
Movie watching	False	True	True

< Devices' states per each scene >



Resource Model

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- Provided in a form of 3 OIC resources for a scene
 - **SceneList**, **SceneCollection**, **SceneMember**
- Authorized OIC client can easily discover the resources and create/update/execute a scene by sending CoAP request

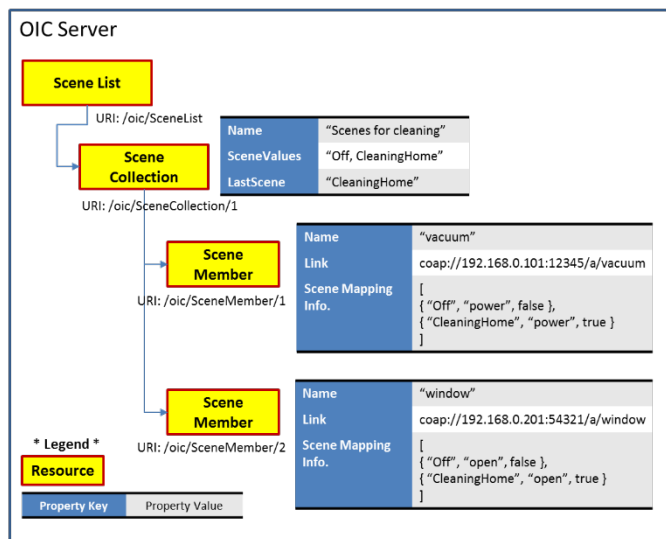
OIC Client



My mom's phone



Create /
Update /
Execute
Scene



OIC Server



URI:
coap://192.168.0.101:12345/a/vacuum

OIC Server



URI:
coap://192.168.0.201:54321/a/window

Resource Model Details (1/3)

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- **SceneList resource**
 - As several SceneCollection resources as child resources
 - Any authorized OIC client can discover the SceneList resource with its resource type, "oic.wk.scenelist"

Resource Name		URI	Resource Type
SceneList		/SceneListResURI	oic.wk.scenelist

Property Name	Value Type	Access Modes	Description
n	string	RW	User friendly name of the collection
id	string	R	A unique string that could be a hash or similarly unique

Resource Model Details (2/3)

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- **SceneCollection resource**
 - Has several SceneMember resources as child resources
 - Shows a list of scenes as a property
 - OIC client can execute one of the scenes by sending Update request to a certain property

Resource Name		URI	Resource Type
SceneCollection		/SceneCollectionResURI	oic.wk.scenecollection
Property Name	Value Type	Access Modes	Description
n	string	RW	User friendly name of the collection
id	string	R	A unique string that could be a hash or similarly unique
lastScene	string	RW	Last selected Scene, shall be part of sceneValues
sceneValues	string	RW	All Available Scene Values

Resource Model Details (3/3)

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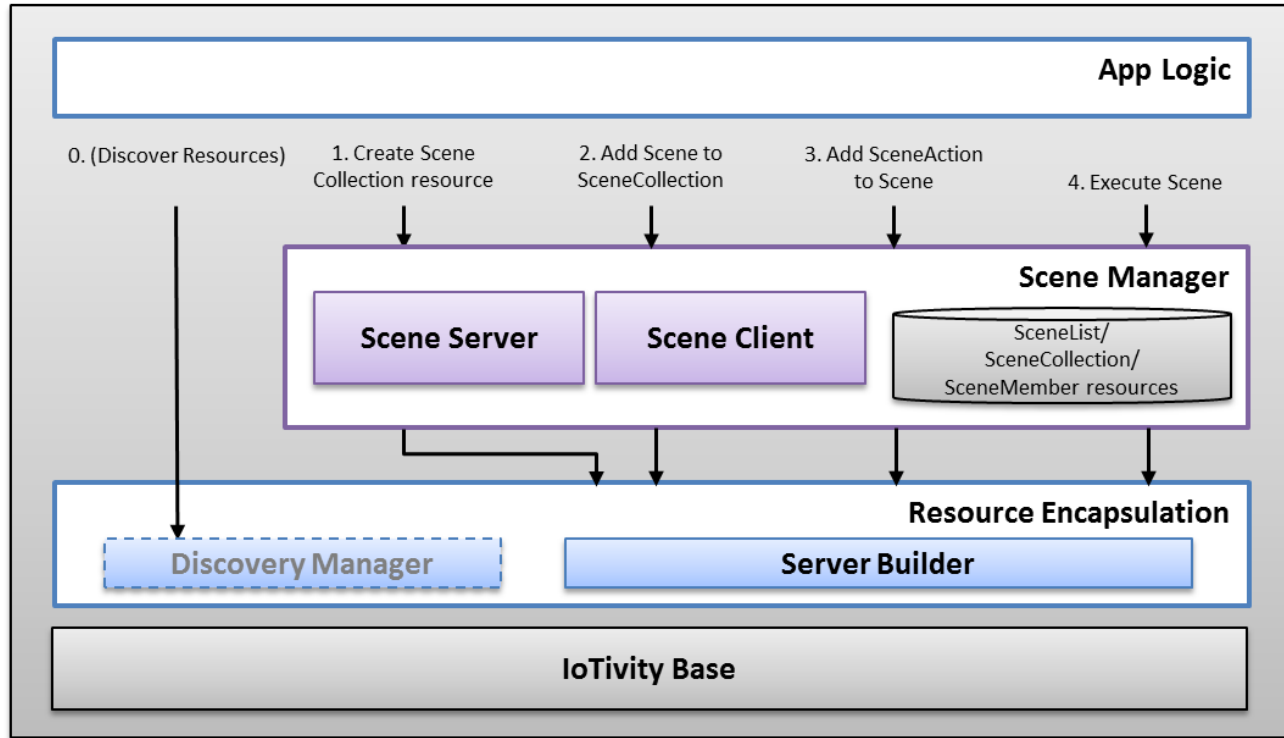
- **SceneMember resource**
 - Contains a link information of other resource (e.g., light resources) to be updated by a scene execution
 - An mapping information

Resource Name		URI	Resource Type
SceneMember		/SceneMemberResURI	oic.wk.scenemember
Property	Value Type	Access Modes	Description
Name			
n	string	RW	User friendly name of the resource
id	string	R	A unique string that could be a hash or similarly unique
link	string	RW	Web link that points at an resource
sceneMappings	array	RW	Array of mappings per scene, can be 1
Items			
Scene	string	RW	Specifies a scene value that will acted upon
memberProperty	string	RW	Property name that will be papped
memberValue	string	RW	Value of the member property

Scene Manager: Architecture

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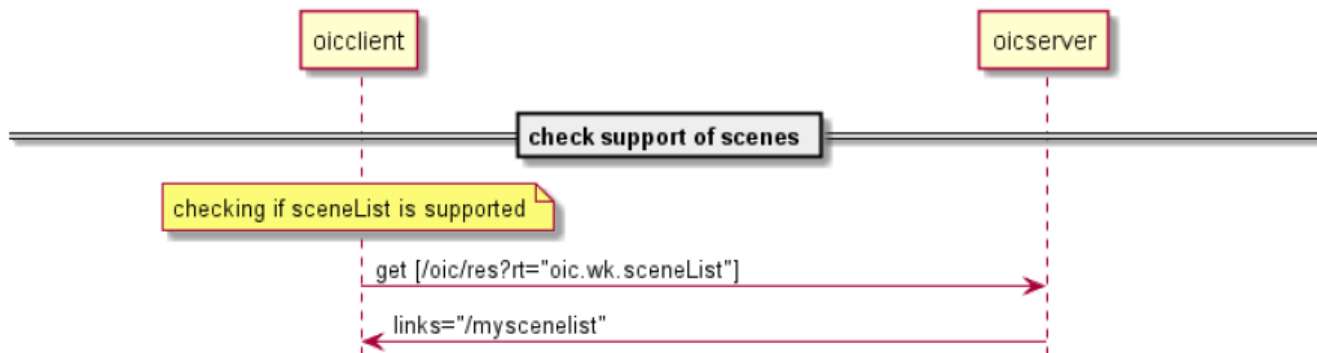


Operations: Check Support for Scenes

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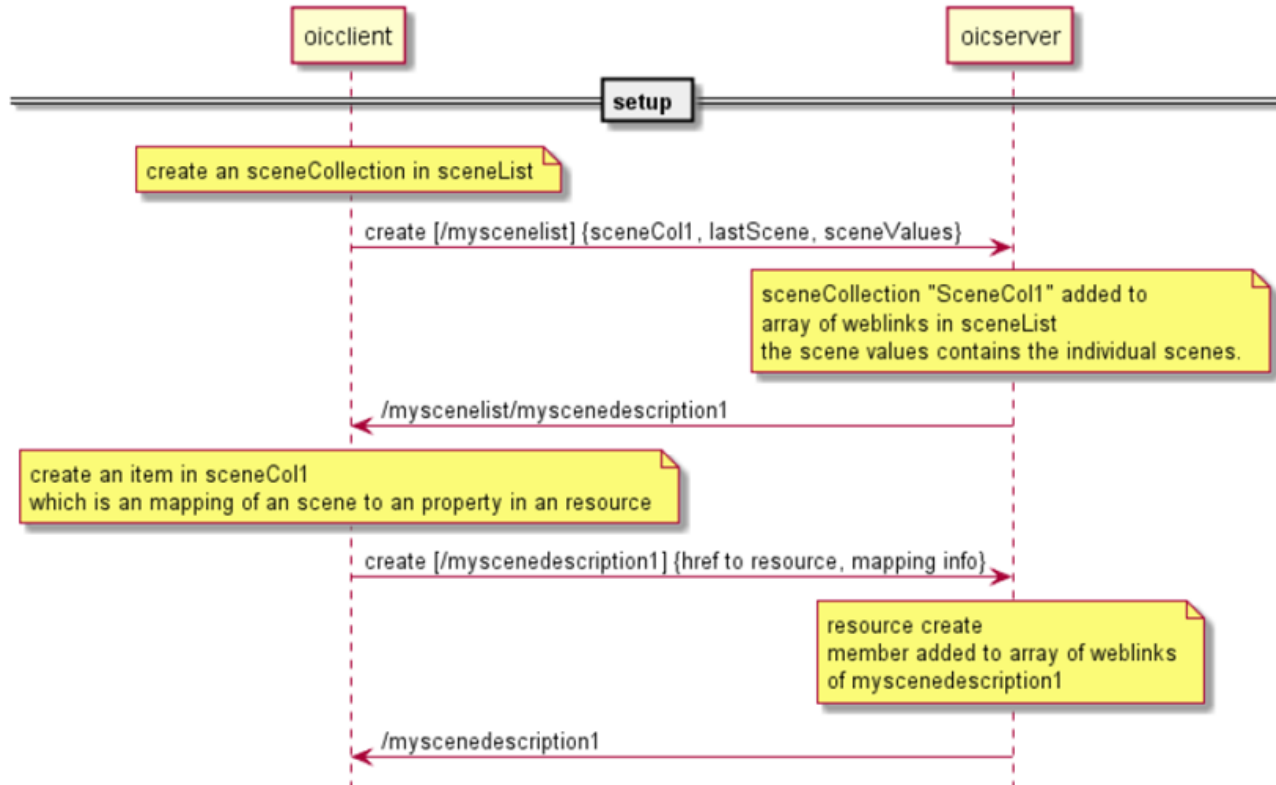
- Checking if `/oic/res` contains the `rt` of the sceneList resource



Operations: Create a Scene

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Create a Scene: Two Use Case

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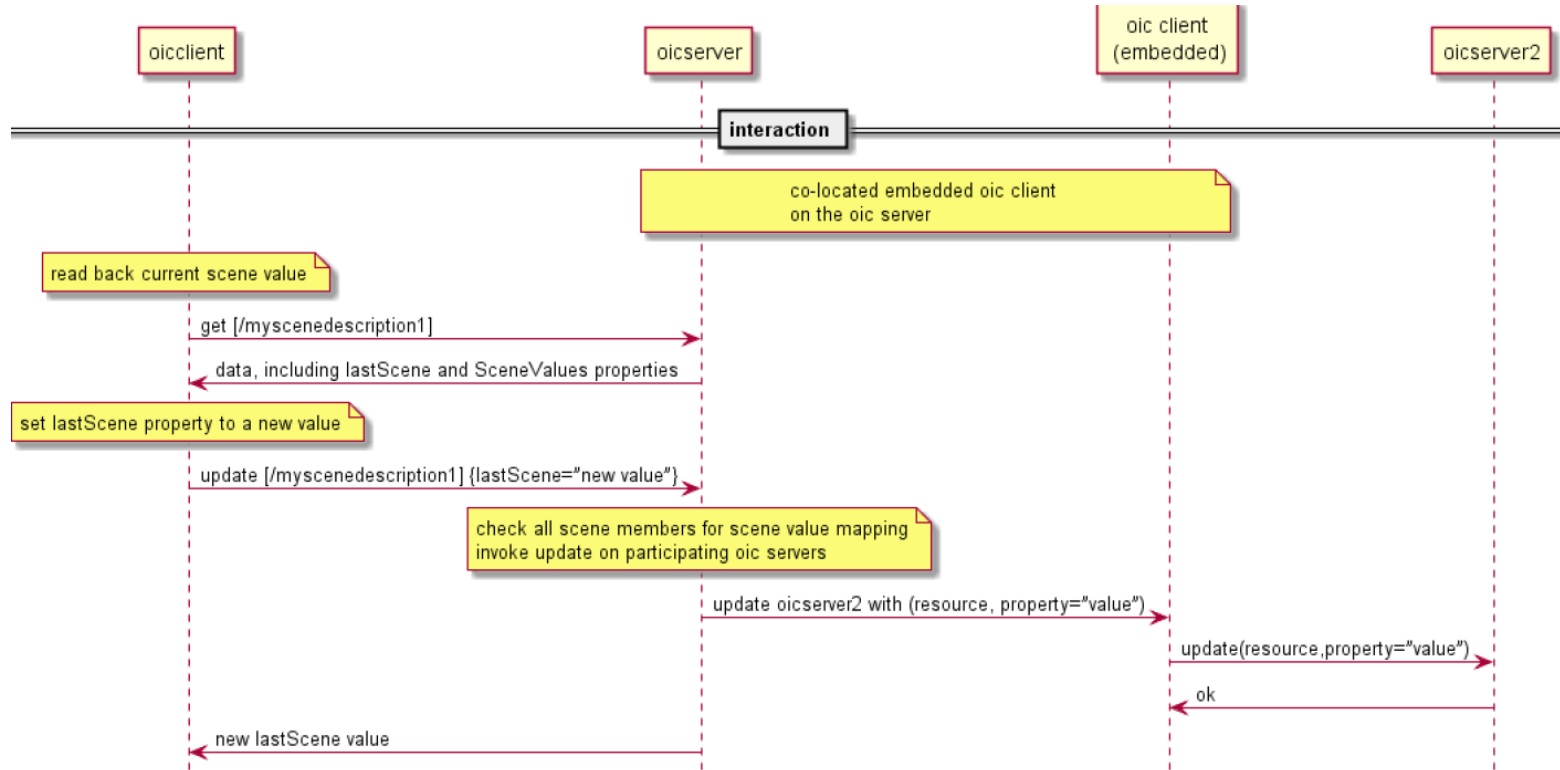
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- Create a scene in **own local device**
 - Users can create SceneList, SceneCollection, and SceneMember resource by calling Scene Manager APIs
 - Their properties are directly updated when one of the APIs is called
- **Ask a remote OIC server** to create a scene
 - By sending a CoAP request
 - Users can know an result of a request after receiving a response packet from a remote OIC server
- Provide two sets of classes:
 - Local operation
 - Remote operation

Operations: Interact with Scenes

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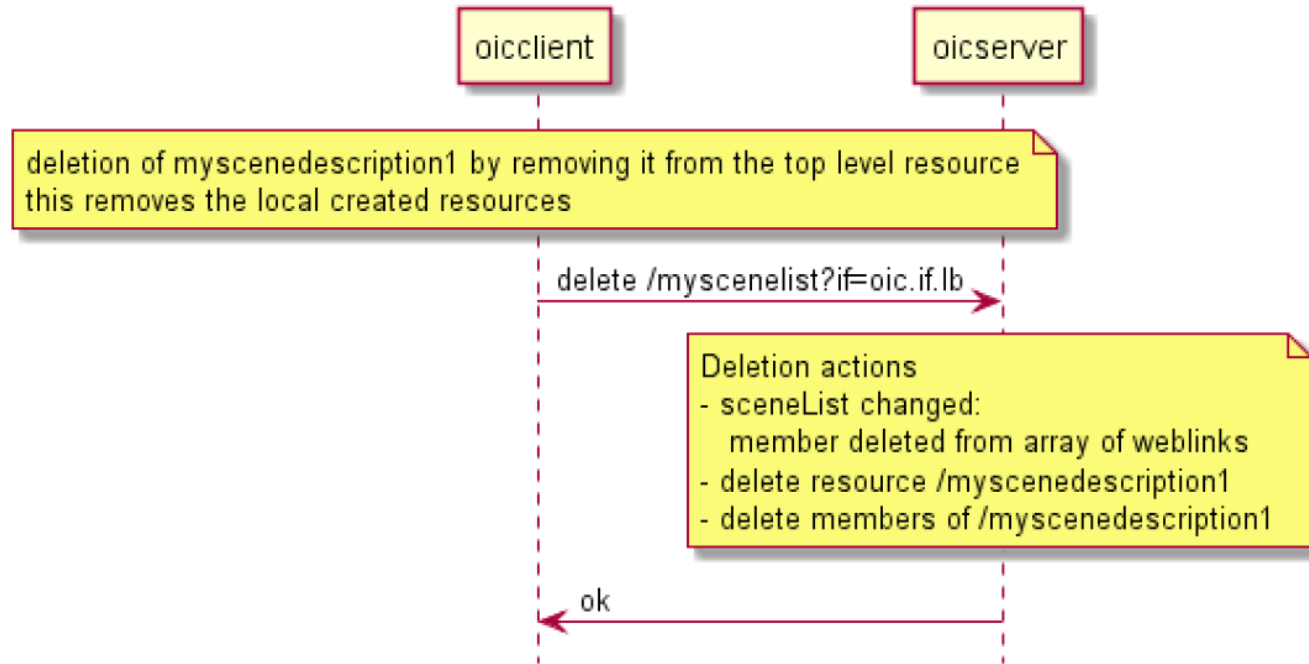
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Operations: Delete a Scene

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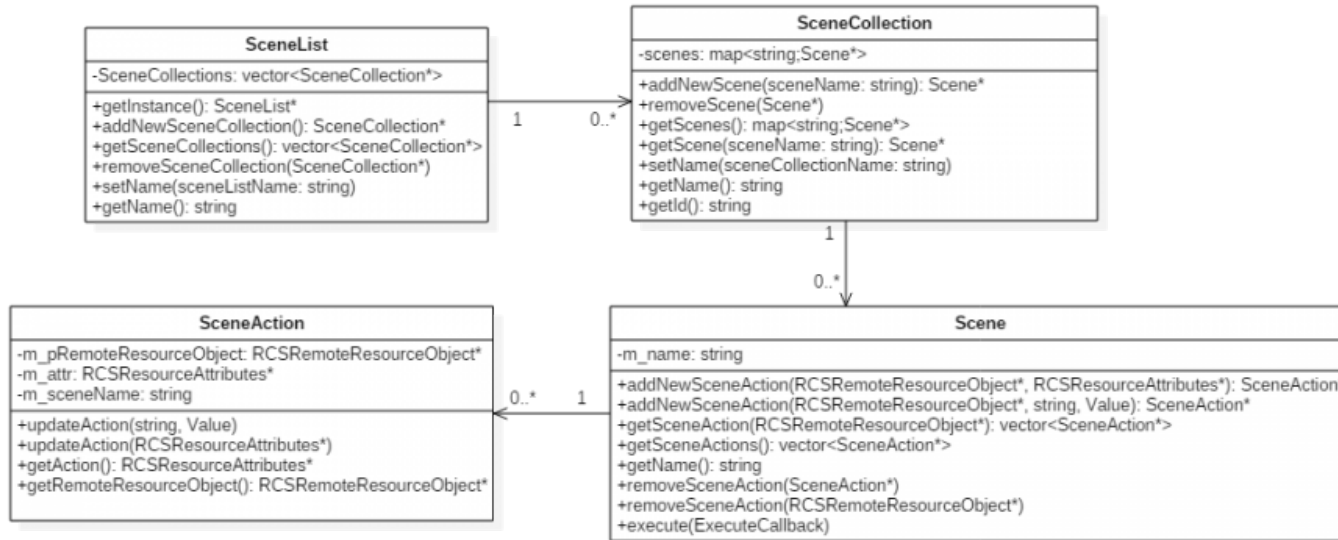


Scene Manager Classes: Local Operation

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- Scene Manager provides 4 interface classes: SceneList, SceneCollection, Scene, and SceneAction classes



Scene Manager Classes: Remote Operation

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- Scene Manager provides 4 interface classes: RemoteSceneList, RemoteSceneCollection, RemoteScene, and RemoteSceneAction classes

