

Redfish Interface Emulator

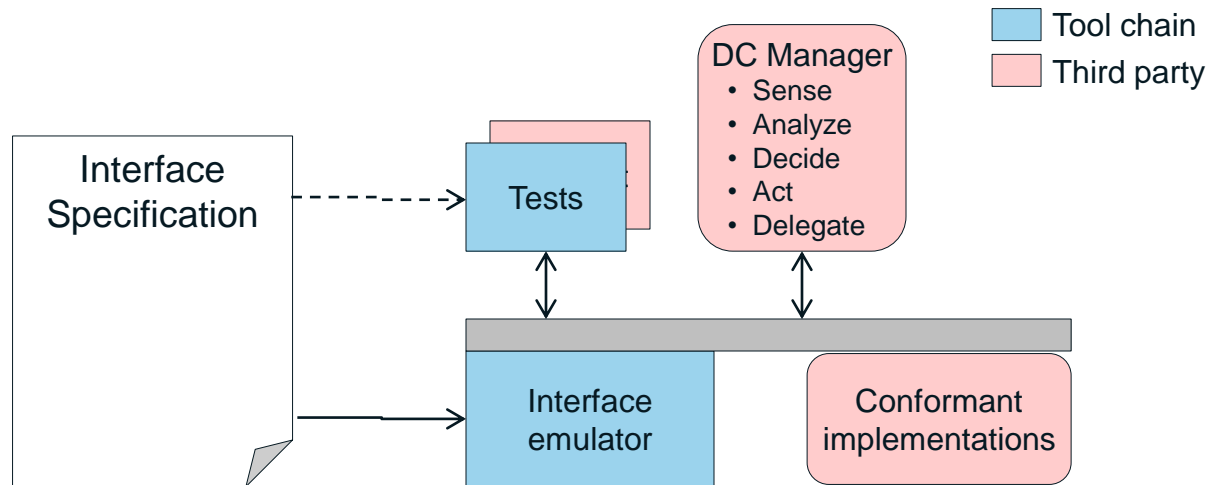
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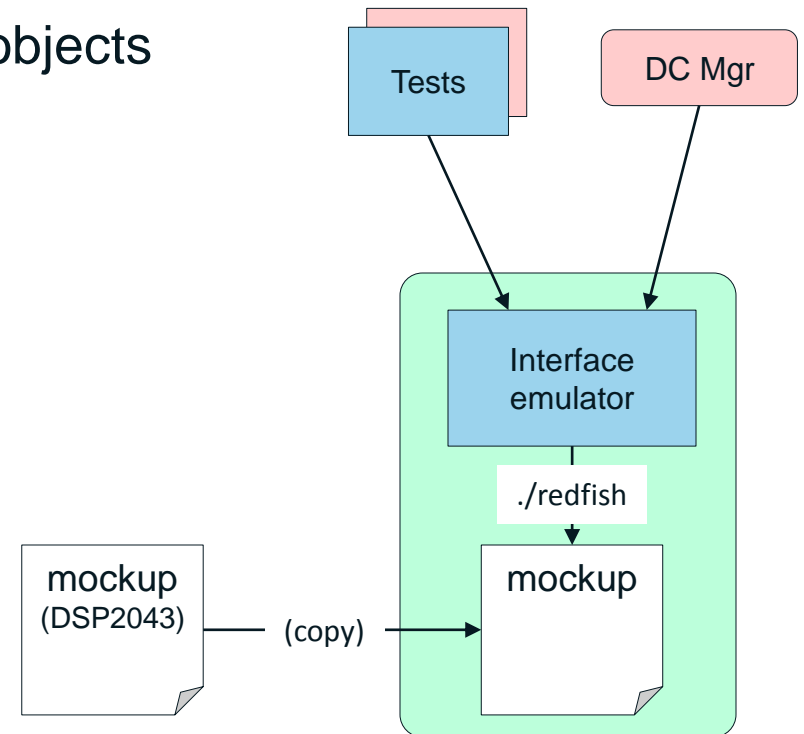
Value of Interface Emulators

- Assist in designing interface - instantiate modeling concepts
- Allow development of unit and validation tests prior to implementation (HW, SW, FW)
- Ability to replicate/scale – limited by compute resources



Design Goals

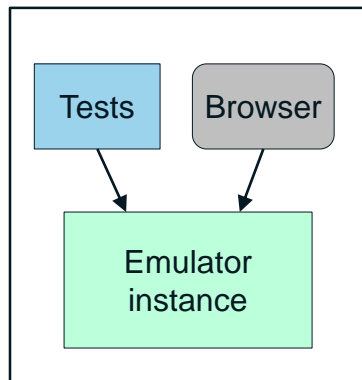
- Implement in Python
- Rapid instantiation
 - Static emulation (dmtf.github.io/spmf) – copy mockup
 - Dynamic emulation – code Python objects



Design Goals: Execution Environments

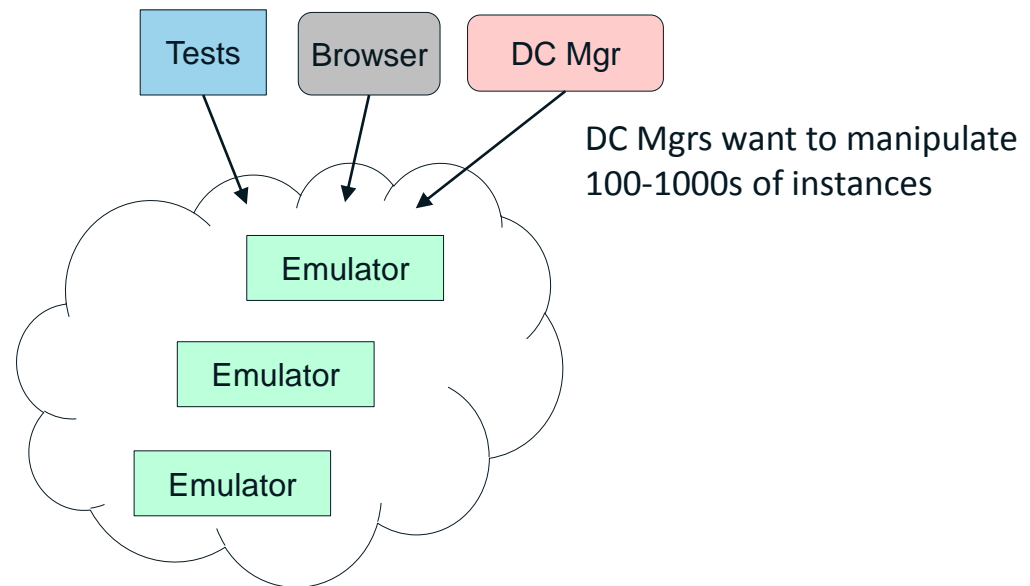
- Instances and tests can be hosted standalone or in a cloud foundry

Standalone



```
emulator-config.json
{
  "SPEC": "Redfish",
  "MODE": "Local"
}
```

Cloud Foundry



```
emulator-config.json
{
  "SPEC": "Redfish",
  "MODE": "Cloud"
}
```

Development Tree

Emulator

- `emulator.py`
- `emulator_ssl.py`
- `./api_emulator`
- `./templates`

Unit Test

- `unittest.py`
- `./unittest_data`

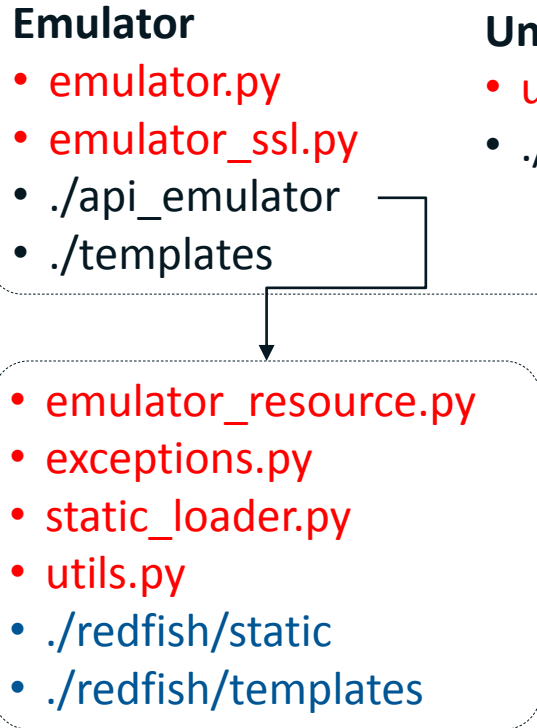
Local instance

- `install.py`
- `./dependencies`

Cloud Foundry

- `Requirements.txt`¹
- `Procfile`

¹List of Python packages to auto-load

- 
- `emulator_resource.py`
 - `exceptions.py`
 - `static_loader.py`
 - `utils.py`
 - `./redfish/static`
 - `./redfish/templates`

Instantiate in Cloud Foundry

```
> cf push redfish
urls: redfish.cloudfoundry.com created
```

Access

```
GET http://redfish.cloudfoundry.com/redfish/v1
```

To validate, run unit tests

```
$ python unittests.py Redfish "redfish.cloudfoundry.com"
```

Inspect "test-redfish-emulator.log"

Creating Dynamic Resources

Process

1. Convert static mockups into templates
2. Write Python for resource (and reference templates)

- emulator_resource.py
- exceptions.py
- static_loader.py
- utils.py
- ./redfish
- ./redfish/static
- ./redfish/templates

chassis.py
computer_systems.py
computer_system.py
processor.py
resource.py
simple_network.py
simple_storage.py

Emulator Capabilities

- Randomize value that are unique per instance (e.g. serial number)
 - Can specify format for unique value (regex-like pattern)
- Ability to HTTP POST an Action (e.g. reset)
 - For a process to handle action while primary acknowledges request
- Ability to change property value
 - Combined with above to enable **Action=ApplySettings**
- Eventing (subscription/publish)
 - **POST `http://<URL>/redfish/v1/EventService/?Action=Subscribe`**
 - **{ "Destination": "(dest-url)", "Types": ["StatusChange"], "Context", "SystemAdmin" }**
- Support HTTP and HTTPS

Backup

Api_emulator Directory

Files & Directories	Description of Contents
dependencies	Required Python packages
exception.py	Exceptions thrown in Emulator
resource_manager.py	Loads and constructs the resources to be emulated. Loads both the static and dynamic resources. Handles creation, deletion and utility of resources
static_loader.py	Called by resource_manager.py to load the static resources from ./redfish/static
utils.py	Supporting functions (3)
./redfish	Directory of static and dynamic resources
./redfish/static	Static resources – mockup directory tree
./redfish/template	JSON template to use for creating instances of a dynamic object

Python

- Python 2.7
- Python packages (./dependencies)
 - Flask
 - Flask-RESTful
 - aniso8601
 - itsdangerous
 - Jinja2
 - MarkupSafe
 - pytz
 - requests
 - six
 - Werkzeug