Introduction to Juju Relations

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OSM orchestrates Network Functions

Physical  Virtual  Container
Understand the challenge of integration
The integrations is done at the operator level
Relations are integration between operators
Matching endpoints can be related

MySQL Operator Charm
- Install scripts
- Upgrade scripts
- Custom action scripts
- Scaling scripts
- Configuration scripts
- ...

WordPress Operator Charm
- Install scripts
- Upgrade scripts
- Custom action scripts
- Scaling scripts
- Configuration scripts
- ...

Typed endpoints
Operator Charm
- Install scripts
- Upgrade scripts
- Custom action scripts
- Scaling scripts
- Configuration scripts
  ...
  Integration scripts

Operator Charm
- Install scripts
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  ...
  Integration scripts
Endpoint

An endpoint is used to connect to another application’s endpoint in order to form a relation.

- Requires: The endpoint can make use of services represented by another charm’s endpoint. These can be optional.
- Provides: Represents a service that another charm can make use of over a given interface
- Peers: only used between units of the same application

Operator Charm

Endpoint
Relation: Provides-requires

Application: mysql

mysql/0

Application: wordpress

wordpress/0
Relation: Peer

Application: mysql

mysql/0

mysql/1

mysql/2
Interfaces

Is the communication protocol used over a relation between applications (i.e. http)

- Interfaces express which data must be exchanged in the relation
- Only endpoints with the same interface can be related
Haproxy Operator charm

apache2 Operator charm

Mysql Operator charm

Wordpress Operator charm

mysql

http

http

Potential relation
LXD Operators

Proxy Charm
Ops Code

OSM

VIM

Magma GW

Native Charm
EnodeB + UE

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LXD Operators

Magma GW Operator charm

Sending MME IP address

MME IP address received! Registering… Registered!

Enodeb + UE Operator charm

VIM

Mme-addr: 192.168.100.254 -
I'm registered!

Relate!

LXD Operators

Magma GW Operator charm

OSM

Mme-addr: 192.168.100.254

- 

VIM

Magma GW

Enodeb + UE Operator charm

I'm registered!
Operator charm

LXD Operators

Operator charm

VNF

Operator charm

VNF

PNF

PNF

Racks

VIM

K8s Operators

Operator charm

VNF

PNF

Kubernetes

KNF
Charms are universal operators
• When a relation is established, relationJoined event is triggered in both charms

• After relationJoined, relationChanged will be triggered

• Any time a charm writes into the relationData, relationChanged event will be triggered in the other side of the relation

```python
def on_relation_joined(self, event):
    rel = self.model.get_relation("agw")
    if rel is None:
        event.defer()
        return
    if not self.state.ready:
        return
    rel.data[self.unit]["mme-addr"] = get_ip()

def on_relation_changed(self, event):
    rel = self.model.get_relation("agw")
    if rel is None:
        event.defer()
        return
    mme_addr = rel.data[event.unit].get("mme-addr")
    if mme_addr:
        ...
```
**VNFD: Relation**

- In the vnf configuration we need to specify the relations we want to add.
- The entities key is a two-element array that includes both endpoints of the relation.
- The id of the entity is the VDU id, and the endpoint is the name of the interface/endpoint provided by the charm.
Any questions?