Cloud Federation

Charles (Cal) Loomis & Mohammed Airaj
LAL, Univ. Paris-Sud, CNRS/IN2P3
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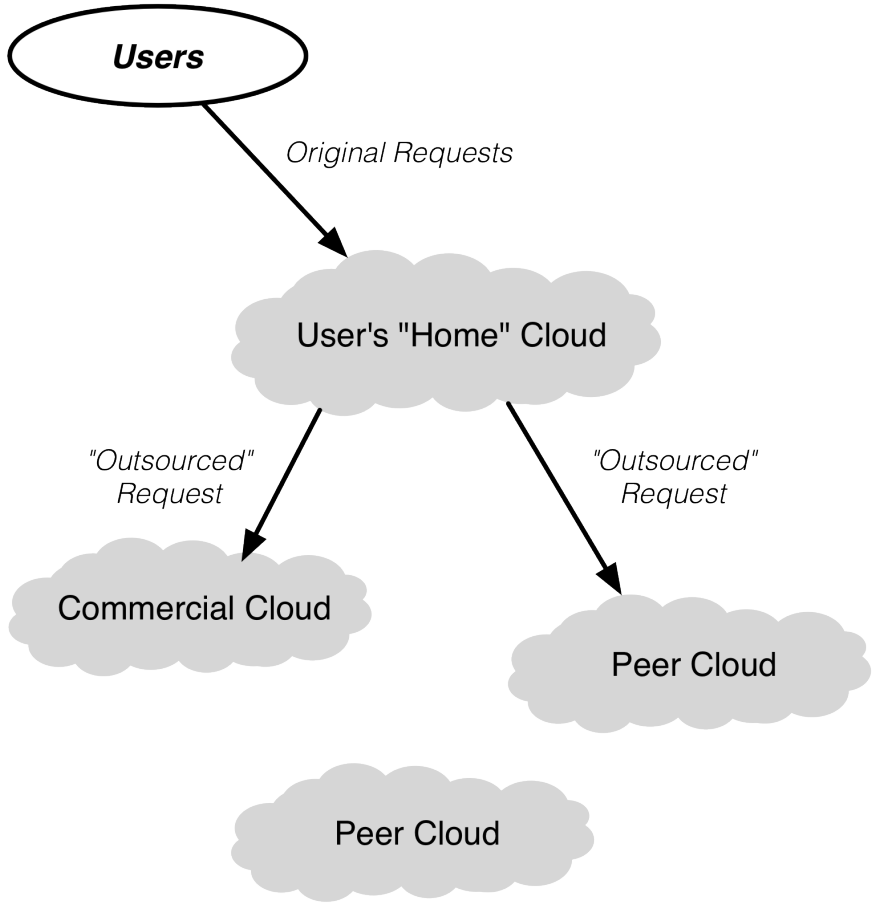
Federation Models (Hybrid Cloud & “Sky” Computing)

Transparent Federation

- Site operators “outsource” to other providers
- Completely transparent to end users
- Difficult to achieve in practice because of concerns about data protection, network access and performance

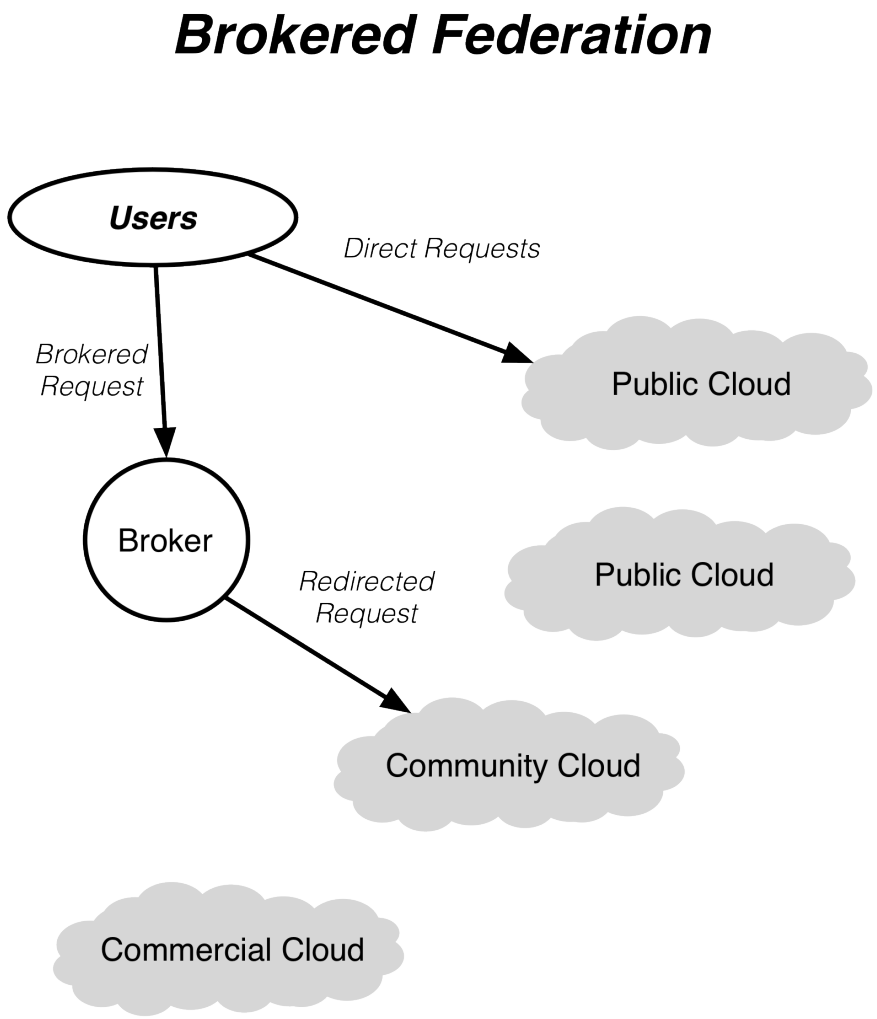
Peer Federation or Bursting



Federation Models (Hybrid Cloud & "Sky" Computing)

Brokered Federation

- Variety of different cloud infrastructures are visible to users
- Users choose to place virtual machines in particular locations
- Simple clients can handle federation if differences are small
- Orchestrators are needed for larger differences between clouds

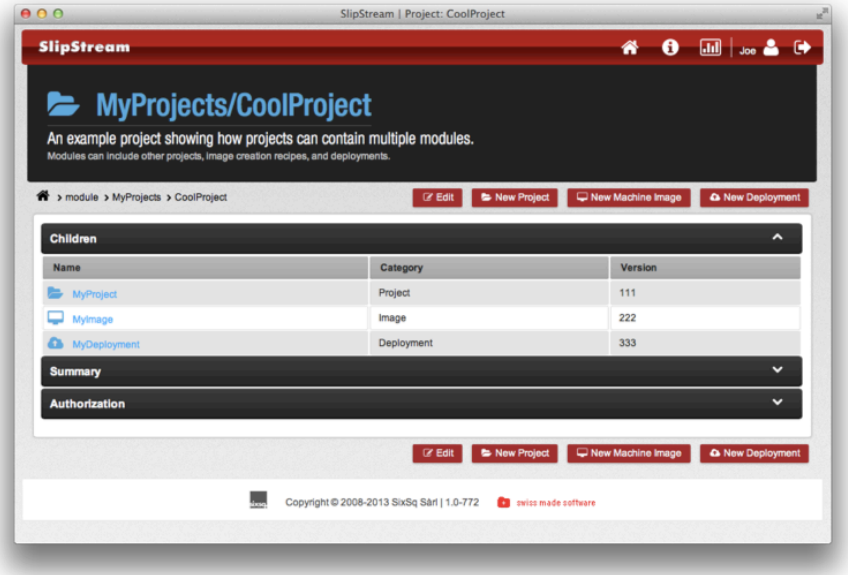


Both Helix Nebula and EGI take the brokered approach

SlipStream

Cloud orchestrator and deployment engine

- Facilitates testing, deployment, and maintenance of complex systems
- Transparent access to multiple cloud infrastructures
- Allows automated multi-cloud deployment of systems



SlipStream Installation

Installation

- Development version of SlipStream in StratusLab repository
- Install server with yum

```
$ yum install -y slipstream-server
```

Start Database

- Ignore errors coming from startup script…

```
$ service hsqldb start
```

Start SlipStream

```
$ service cimi stop  # CIMI and SlipStream conflict on 443!
$ service slipstream start
```

- Browse to interface: https://your-machine/

SlipStream Configuration

Log in as Superuser

- Username: ‘super’
- Password: ‘siXsQsiXsQ’
- Should change passwords for all standard accounts!

Documentation

- All docs are available through SlipStream interface

Configure for StratusLab

- Connector for StratusLab is already installed
- Go to configuration page via “wrench” icon at top
- Provide values for all parameters
- Use “pdisk” for msg. type, pdisk endpoint for msg. endpoint

SlipStream Configuration

Try it out

- Log in a normal user
- Configure normal user parameters with StratusLab credentials

Examples

- Launch VM: quick start for a single machine
- Run RStudio: R-based analysis server
- Torque Cluster: deployment of full batch cluster

Federation

Configure for Second Cloud

- Log in a superuser
- Add configuration for a second cloud

Launch Multi-cloud Deployment

- As a normal user
- Copy the multi-cloud deployment
- Modify copy to put one machine in each cloud
- Launch deployment
- Verify that machines are accessible in both clouds

Exercises

1. Install SlipStream on your frontend
2. Configure for use on your own cloud
3. Try out launching of machines and deployments
4. Configure to federate your neighbor's cloud
5. Verify that multi-cloud deployments work

Conclusions

In scientific settings, SlipStream provides interesting capabilities:

- Provide pre-configured services for admins and users
- Allow users to federate resources on multiple infrastructures
- Graphical interface to cloud infrastructures

Upcoming Features

- Autoscaling of deployments
- Unified dashboard for configured clouds
- Support for wider variety of clouds

Questions and Discussion

website	http://stratuslab.eu
twitter	@StratusLab
support	support@stratuslab.eu
StratusLab source	http://github.com/StratusLab
SlipStream source	http://github.com/slipstream

http://stratuslab.eu/