

SixSq Cloud Capabilities

SlipStream: Multi-cloud Management Platform

Marc-Elian Bégin, CEO, Co-founder, SixSq
HEPIA Cloud Masters, Lausanne, 2015



Locations



Global Headquarters
Geneva, **Switzerland**



North American
Headquarters
Montreal, Quebec, **Canada**

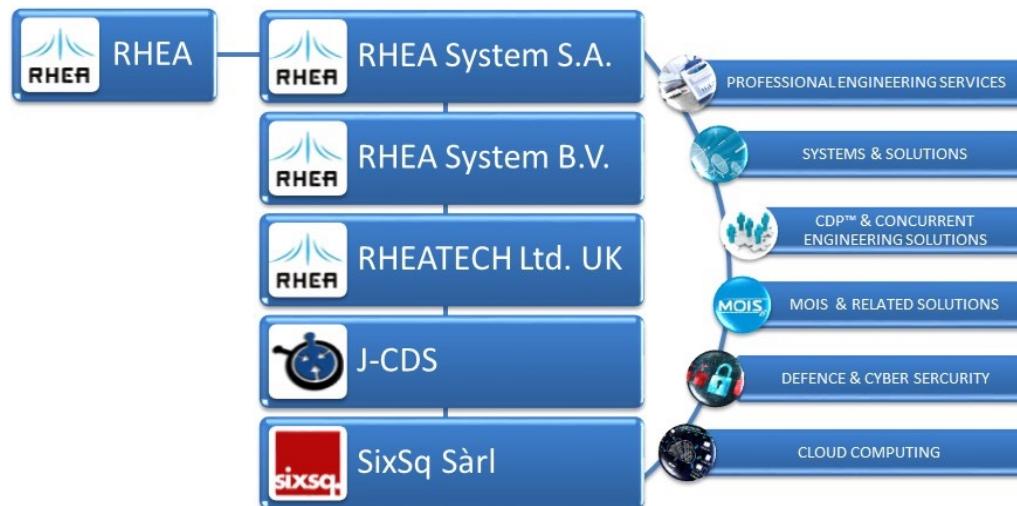


Founded in 2007

- ▶ Innovative
- ▶ Cloud expert
- ▶ Knowledge in all main cloud technologies
- ▶ Delivering cloud neutrality



SixSq now member of RHEA Group



What we do

We innovate solutions

for Space System Engineering and Information Technology





scisys

T...Systems...



Customers



Atos

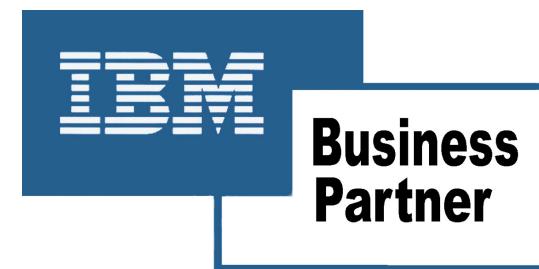
TERMA[®]

interoute
from the ground to the cloud

esa

sixsq.

Partnerships and Collaborations





Helix Nebula Initiative

Strategic Plan

- ▶ Establish multi-tenant, multi-provider cloud infrastructure
- ▶ Identify and adopt policies for trust, security and privacy
- ▶ Create governance structure
- ▶ Define funding schemes

CERN

To support the computing capacity needs for the ATLAS experiment

EMBL

Setting up a new service to simplify analysis of large genomes, for a deeper insight into evolution and biodiversity

esa

cnes iap DLR

To create an Earth Observation platform, focusing on earthquake and volcano research

PIC
port d'informació científica

To improve the speed and quality of research for finding surrogate biomarkers based on brain images

Additional Users:

ECMWF

Suppliers

Atos CGI CloudSigma CSA cloud security alliance™ DANTE www.dante.net esgi indra interoute from the ground to the cloud MEMSET HOSTING

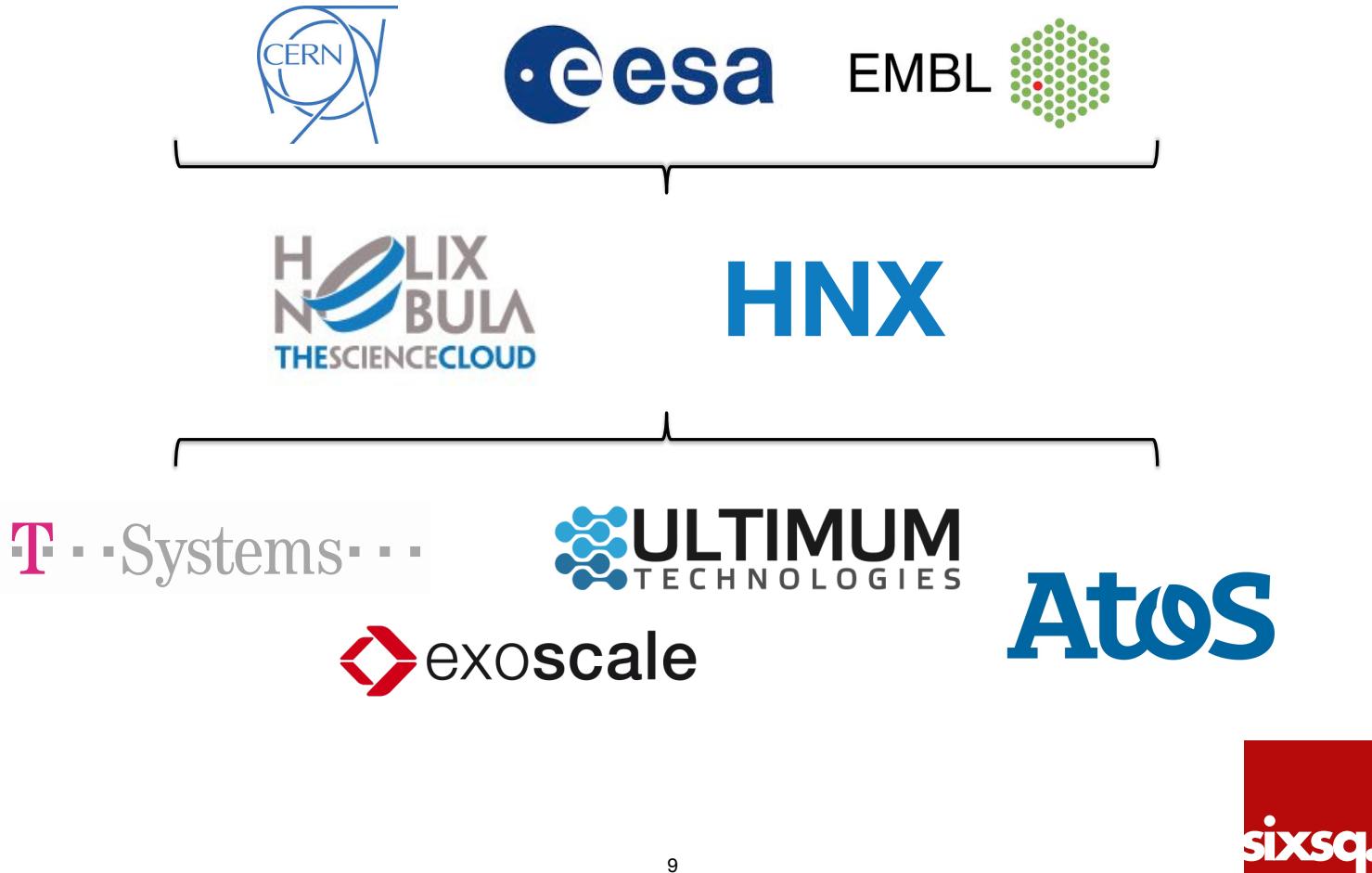
Adopters

RWST Capgemini CLOUDEO CNRS DataCentred deac Ifremer NEPHOS TECHNOLOGIES

SAP sixsq SWITCH ...T...Systems the SERVER LABS ultimum technologies

Prologue Telefónica terradue 20 THALES vito Vandex

Overview



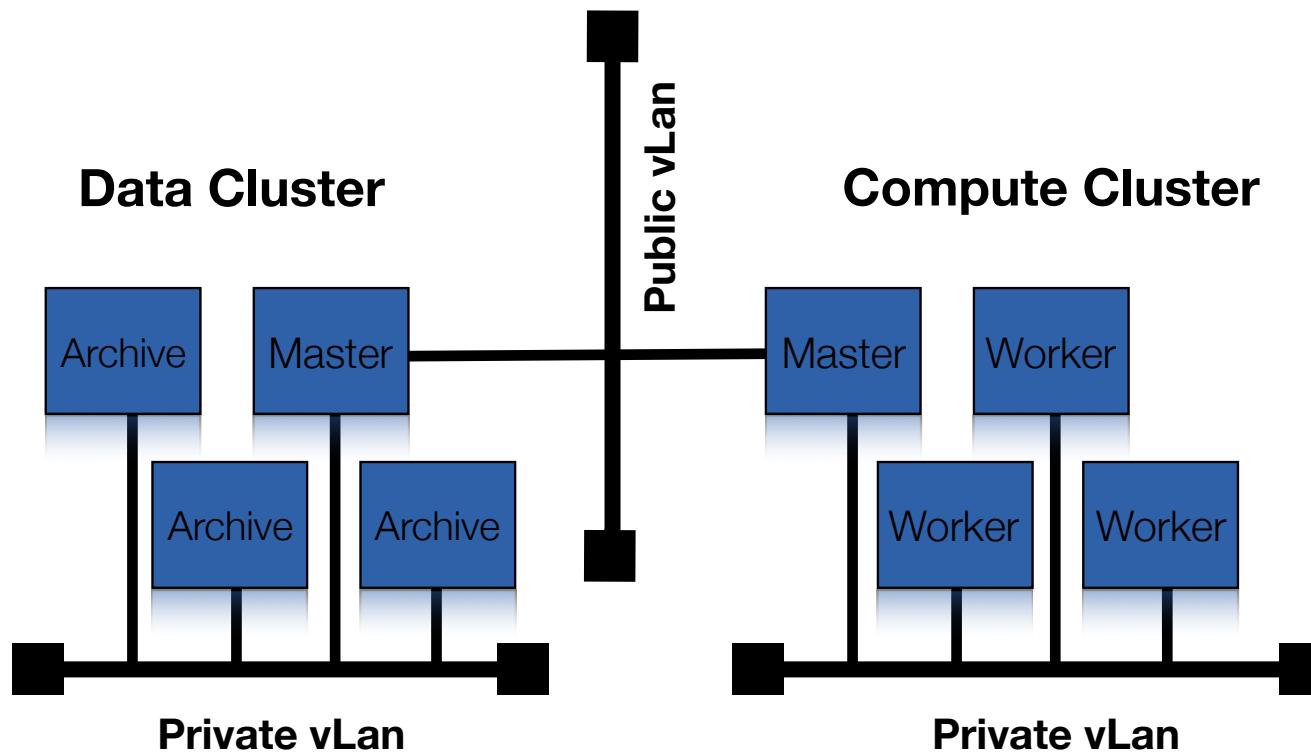


ESA pilot on Helix Nebula...

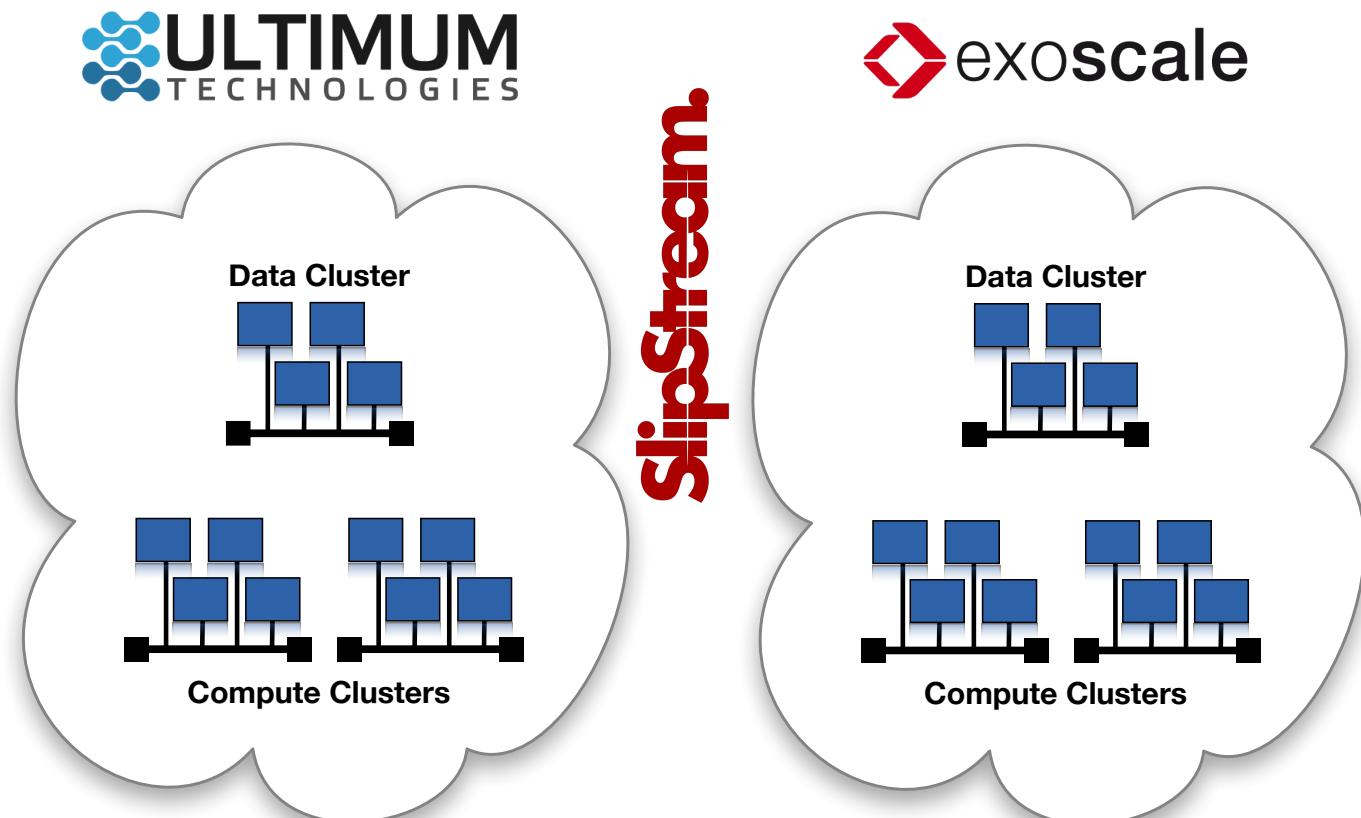
Automatic Cluster Deployment

- Goal
 - Make available rich Earth observation data
 - Facilitate creation of dynamic data processing clusters in the cloud
 - Ignite new data exploitation businesses
- Solution
 - One-click parameterised processing cluster deployment
 - Automatic image construction, from basic base images
 - Data service (e.g. distributed file share)

Deployment Model (simplified)



Deployment Model (simplified)





PaaS
Open Source
Multi-Cloud
Multi-Tenant
...it's all about automation...

SlipStream in the * as a Service

SaaS: Software as a Service

PaaS: Platform as a Service

IaaS: Infrastructure as a Service

SlipStream in the * as a Service

SaaS: Software as a Service

PaaS: Platform as a Service

IaaS: Infrastructure as a Service



IaaS

IaaS



IaaS

Cloud

PaaS

Cloud



IaaS

PaaS

SaaS



IaaS

PaaS

SlipStream.

SaaS



IaaS

PaaS



is a

SlipStream.

SaaS



IaaS

PaaS

SlipStream.

uses

is a

SaaS





↑ Welcome to SlipStream

The welcome page provides you with all currently published modules and root modules, including yours and the ones shared with you.

[New project](#)

App Store



[minecraft-app](#) > v 481

Publisher sebastien.fievet
Description A Minecraft Server



[openerp](#) > v 336

Publisher sebastien.fievet
Description An OpenERP instance backed with PostgreSQL



[windows-server...](#) > v 391

Publisher sixsq
Description Standard installation of the Windows Server 2012 R2 operating system (For



[centos-6](#) > v 544

Publisher sixsq
Description Minimal installation of the CentOS 6 operating system.



[wordpress](#) > v 564

Publisher sixsq
Description simple, single node deployment of WordPress



[ubuntu-12.04](#) > v 569

Publisher super
Description Minimal installation of the Ubuntu 12.04 (LTS) operating system.

Projects

aas

cloud

n

sixsq.

SlipStream.

Dashboard Help ▾ meb ▾

SlipStream.

Dashboard Help ▾ meb ▾

⌚ Dashboard

Control and monitor your cloud activity

⌂ / dashboard

Usage

ec2-eu-west exoscale-ch-gva

5 1

Deployments / Runs / Builds

Virtual Machines

Metering

Copyright © 2015 SixSq
All rights reserved.

swiss made software

Powered by SlipStream ® v2.5
Open source under Apache 2.0 License.

centos-6 > v 544

Publisher sixsq
Description Minimal installation of the CentOS 6 operating system.

wordpress > v 564

Publisher sixsq
Description simple, single node deployment of WordPress

ubuntu-12.04 > v 569

Publisher super
Description Minimal installation of the Ubuntu 12.04 (LTS) operating system.

Projects

The dashboard displays two usage metrics: 5 for ec2-eu-west and 1 for exoscale-ch-gva. Below these are sections for Deployments / Runs / Builds, Virtual Machines, and Metering. At the bottom, there's copyright information for SixSq, a swiss made software logo, and a note about the software being powered by SlipStream v2.5 and open-sourced under the Apache 2.0 license. A Projects section shows three items: centos-6 (v 544), wordpress (v 564), and ubuntu-12.04 (v 569). Each project entry includes publisher information and a brief description.



SlipStream.

Dashboard Help ▾ meb ▾

SlipStream.

Dashboard Help ▾ meb ▾

⌚ Dashboard

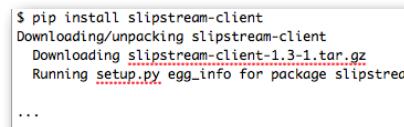
Control and monitor your cloud activity

⌂ / dashboard

Usage

ec2-eu-west


5

exoscale-ch-gva


1

Deployments / Runs / Builds

Virtual Machines

Metering

Copyright © 2015 SixSq
All rights reserved.

```
$ pip install slipstream-client
Downloading/unpacking slipstream-client
  Downloading slipstream-client-1.3-1.tar.gz
    Running setup.py egg_info for package slipstream-client

...
$ ss-execute -h
Usage: usage: ss-execute [options] <module-uri>

<module-uri>  Full URL to the module to execute. For example Public/Tutorials/HelloWorld/client_server

Options:
  -h, --help            show this help message and exit
  -v, --verbose          verbose level. Add more to get more details.
  -u USERNAME, --username=USERNAME
                        SlipStream username
  -p PASSWORD, --password=PASSWORD
                        SlipStream password
  --cookie=FILE          SlipStream cookie
  --endpoint=URL         SlipStream server endpoint
  --parameters=KEY1=VALUE1,KEY2=VALUE2
                        Deployment or image parameters override. The key must
                        be in a form: <node-name>:<parameter-name>. Several
                        pairs can be provided comma separated.
```

centos-6 ➤ v 544

Publisher sixsq
Description Minimal installation of the CentOS 6 operating system.

word... ➤ v 544

Publisher sixsq
Description simple, single node deployment of WordPress

super ➤ v 544

Publisher super
Description Minimal installation of the Ubuntu 12.04 (LTS) operating system.

Projects

SlipStream.

Dashboard Help ▾ meb ▾

SlipStream.

Dashboard

Control and monitor your cloud activity

Usage

ec2-eu-west exoscale-ch-gva

5 1

Deployments / Runs / Builds

Virtual Machines

Metering

Copyright © 2015 SixSq
All rights reserved.

centos-6 > v 544

Publisher sixsq
Description Minimal installation of the CentOS 6 operating system.

word > v 544

Publisher sixsq
Description Minimal installation of the Microsoft Word 2013 operating system.

Projects

SlipStream.

Dashboard Help ▾ meb ▾

SlipStream | API Doc

Get a module

Get a module (i.e. image, deployment or project).

HTTP REQUEST

```
GET https://slipstream.sixsq.com/module/[<module>[/<version>]]
```

BODY PARAMETERS

Parameter	Required	Description
module	true	Unique identifier of the module - e.g. examples/images/ubuntu-12.04.
version	false	Version of the module to update. If not provided, get the latest (most recent)

To list the root projects, simply omit the <MODULE> from the request.

SlipStream code is hosted on GitHub
Documentation Powered by Slate
SlipStream is developed by SixSq

```
$ pip install sixsq
$ pip install -r requirements.txt
$ ss-exe
Usage: ss-exe [options] <module>[<version>]
Options:
  -h, --help            show this help message and exit
  -v, --verbose         verbose output
  -u URL              use URL instead of default
  -p PATH             path to configuration file
  --cookbook           use cookbook instead of default
  --endpoint           endpoint to use
  --parameter          parameter to use
...
$ ss-exe centos-6
$ ss-exe word
```

Display a menu

shell

```
curl https://slipstream.sixsq.com/module/<module> --user <user>:<password> -H "Content-Type: application/xml"
```

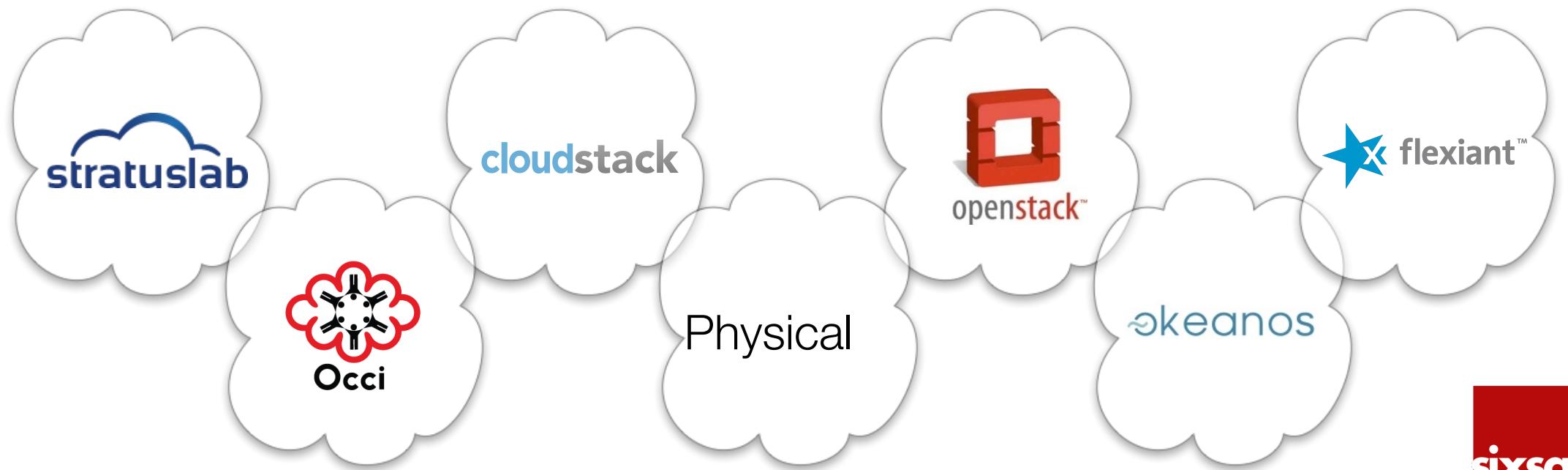
The above command returns a response body structured like this:

```
<imageModule category="Image" creation="2013-12-02 17:00:37.421 UTC" deleted="false" description="Minimal installation of the Ubuntu 12.04 (LTS) operating system." imageId="8c7e60ae-3a30-4031-a3e6-29832d85d7cb" isBase="true" isLatestVersion="true" lastModified="2014-05-04 12:36:06.105 UTC" loginUser="ubuntu" logLink="http://design.ubuntu.com/wp-content/uploads/ubuntu-logo14.png" parentUri="module/examples/images" platform="ubuntu" shortName="ubuntu-12.04" version="480">
  <parameters>
    <entry>
      <string>extra.disk.volatile</string>
      <parameter category="Cloud">
        description="Volatile extra disk in GB" isSet="false" mandatory="true" name="extra.disk.volatile" order="0" order_= "0" readonly="false" type="String"/>
      </entry>
    <entry>
      <string>exoscale-ch-gva.instance.type</string>
      <parameter category="exoscale-ch-gva">
        description="Instance type (flavor)" isSet="true" mandatory="true" name="exoscale-ch-gva.instance.type" order="0" order_= "0" readonly="false" type="String">
          <value>Small</value>
          <defaultValue>Small</defaultValue>
        </parameter>
      </entry>
    ...
    <entry>
      <string>ec2-eu-west.security.group</string>
      <parameter category="ec2-eu-west">
        description="Security groups (comma separated list)" isSet="true" mandatory="true" name="ec2-eu-west.security.group" order="0" order_= "0" readonly="false" type="String">
          <value>default</value>
        </parameter>
      </entry>
    ...
  </parameters>

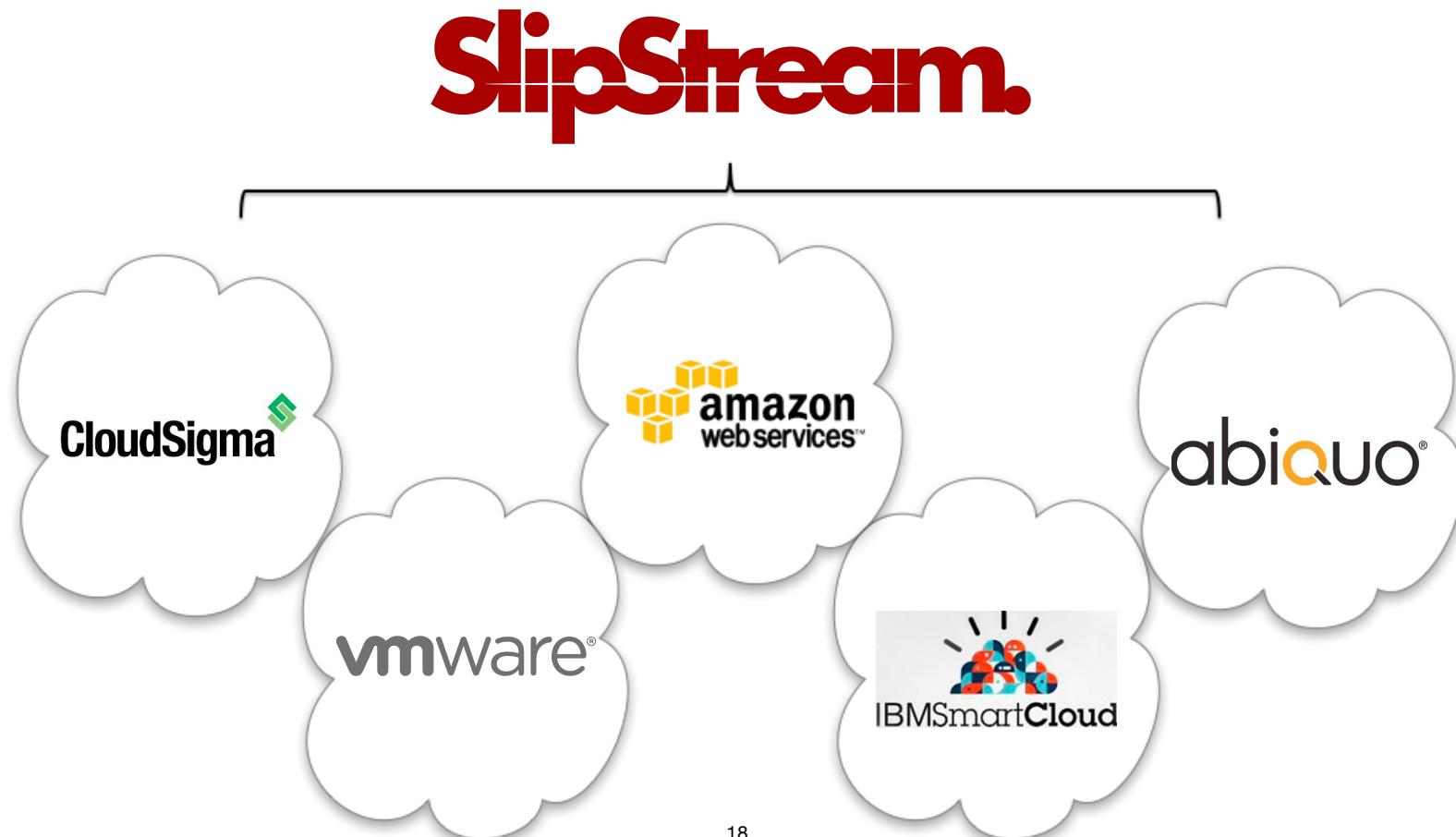
```

Supported IaaS (Open Source)

SlipStream.



Supported IaaS (Proprietary)



In a Nutshell

- **Open Source:** Released under the Apache 2.0 license, giving you openness and transparency
- **Professional:** A dedicated team designs, develops, tests and supports SlipStream based solutions
- **Multi-Cloud:** A truly multi-cloud and cloud agnostic provisioning platform giving you freedom of choice, avoiding lock-in

In a Nutshell (2)

- **Multi-Tenant:** Build for enterprise, with multi-tenancy support
- **Automation:** Built-in Enterprise App Store feature makes using SlipStream child's play, without compromising security
- **Scalable:** Used by distributed teams, with demanding workloads, means SlipStream will scale with your usage

Use cases

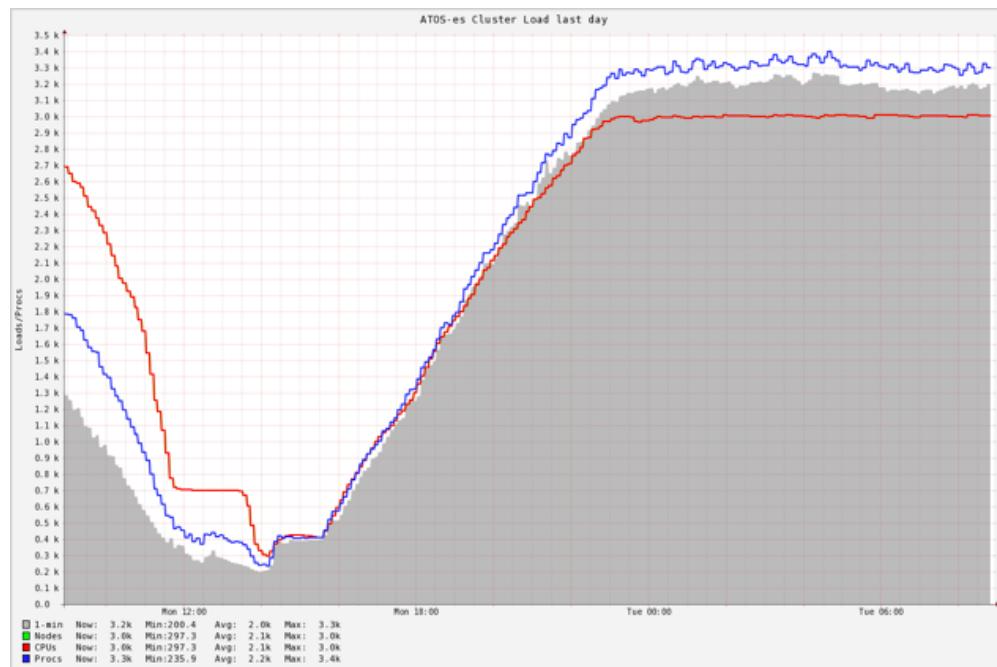
- **Enterprise App Store / Self-Service IT:** Provisioning applications inside an organisation should be as simple as installing an app on a mobile
- **Hybrid Cloud Provisioning:** The ability to burst or scale-out to public or remote clouds can yield significant tactical, strategic and cost benefits
- **LAMP and complex application provisioning:** What most organisations want is the ability to reason in terms of application or even sets of interrelated applications

Use cases (2)

- **DevOps platform:** Teams need to be able to *fluidify* their development and deployment process, such that apps be deployed in (pre-)production in the most efficient way
- **Cloud Marketplace** (Helix Nebula Cloud Exchange - HNX): Federate several clouds under the same *broker* or *facade* to reduce cloud switchover costs and remove lock-in
- **Auto-Scale and Mutable Deployments:** Grow and shrink cloud resources automatically to reduce cost, improve service quality and security

SlipStream at Scale (via HNX)

CERN provisioning ~3000 VMs for LHC computation



Products and Technologies

Products and Technologies

SlipStream.

Products and Technologies

SlipStream.

+



Products and Technologies

SlipStream.

+

stratuslab

Products and Technologies

Products and Technologies

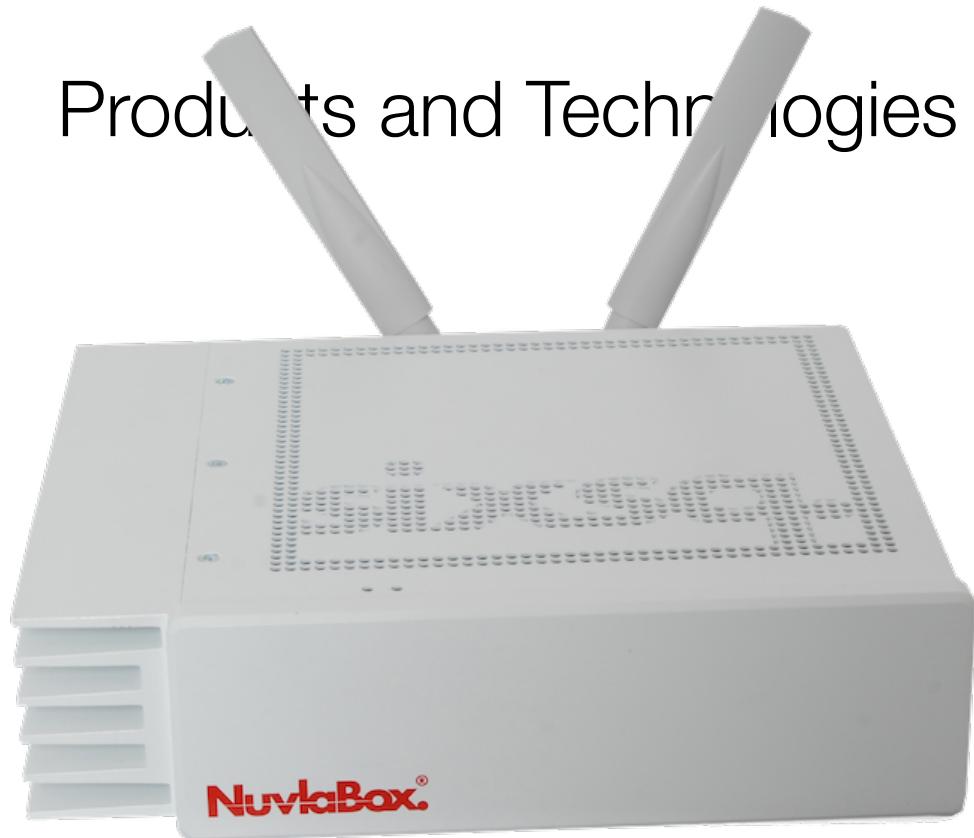
=

Products and Technologies

NuvlaBox.

Products and Technologies

Products and Technologies



NuvlaBox - Software Specification

- Open Source foundation
- OS: CentOS
- Cloud layer / IaaS: StratusLab (incl. KVM)
- App Store / PaaS: SlipStream

NuvlaBox - Hardware Specification

- i5 Intel processor
- 16 GB RAM
- 240 GB SSD storage
- 120W external power supply
- Wi-Fi card
- 4 x of USB ports
- HDMI interface
- 2 x RJ-45 network adapter

Remote Controlling NuvlaBoxes

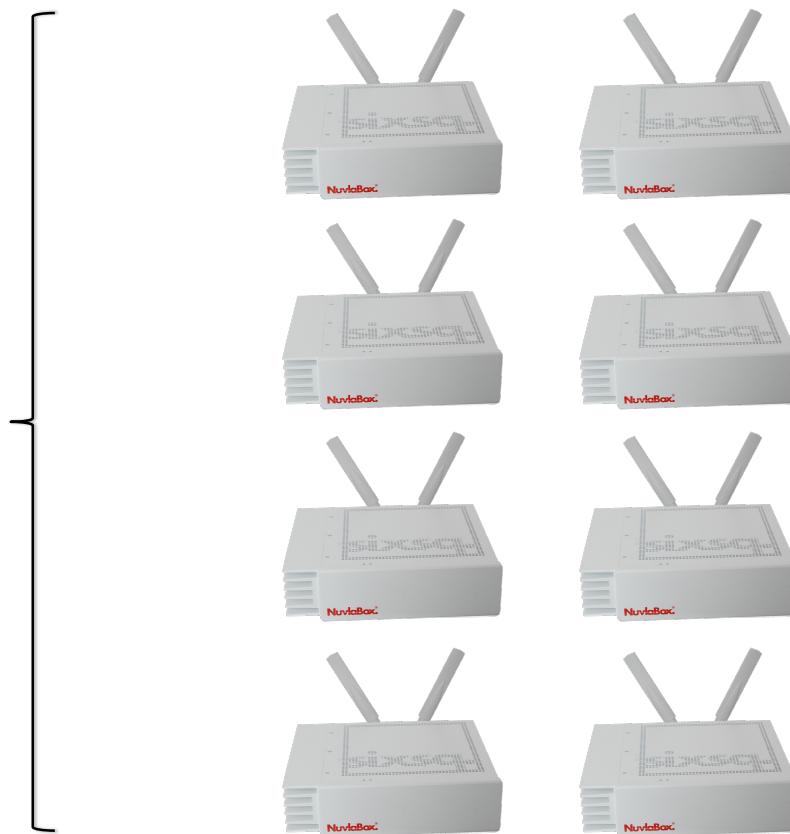


Remote Controlling NuvlaBoxes

SlipStream.



Remote Controlling NuvlaBoxes



The background of the image is a vibrant blue sky filled with wispy, white, cirrus-like clouds. A group of approximately ten dark-colored birds, likely geese or swans, are captured in flight across the center of the frame. They are positioned at various heights and angles, some with wings fully extended and others partially folded. The overall composition suggests a sense of movement and freedom.

Thanks :-)
sixsq.com
info@sixsq.com