

Cloud Computing

Dominique Rodrigues

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Présentation de l'orateur



Sure, They're A Little Weird

But where would we be without them? Show the love!

Sys Admin Day

System Administrator Appreciation Day

They are the over-worked, the under-appreciated, and the misunderstood. They are also the ones we rely on to keep us working day in and day out.

The System Administrator. Whether it be restoring accidentally deleted files ("I swear I hit 'Cancel'"), answering our most basic of computer questions or staying up until all hours of the night fixing the network; the Sys Admin allows us to get our job done every day. All they ask for in return is our adoration and the occasional case of Rockstar.

GOOD MORNING

Présentation de l'orateur

DevOps @ Oyst



Co-fondateur & CTO @ Nanocloud Software



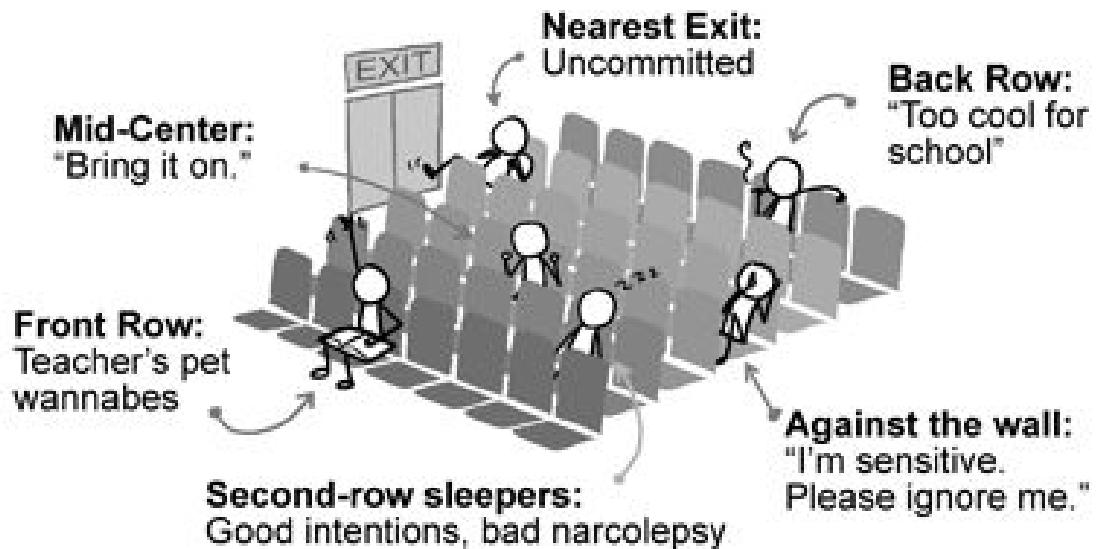
Ingénieur-Chercheur @ CEA



Échange avec les élèves

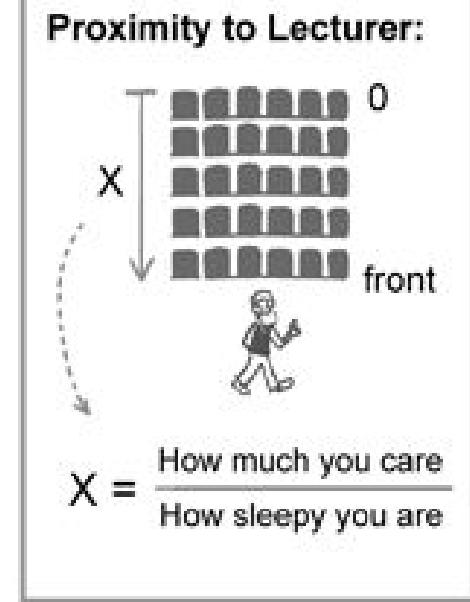
WHERE YOU SIT IN CLASS/SEMINAR

And what it says about you:



WWW.PHDCOMICS.COM

JORGE CHAM © 2008



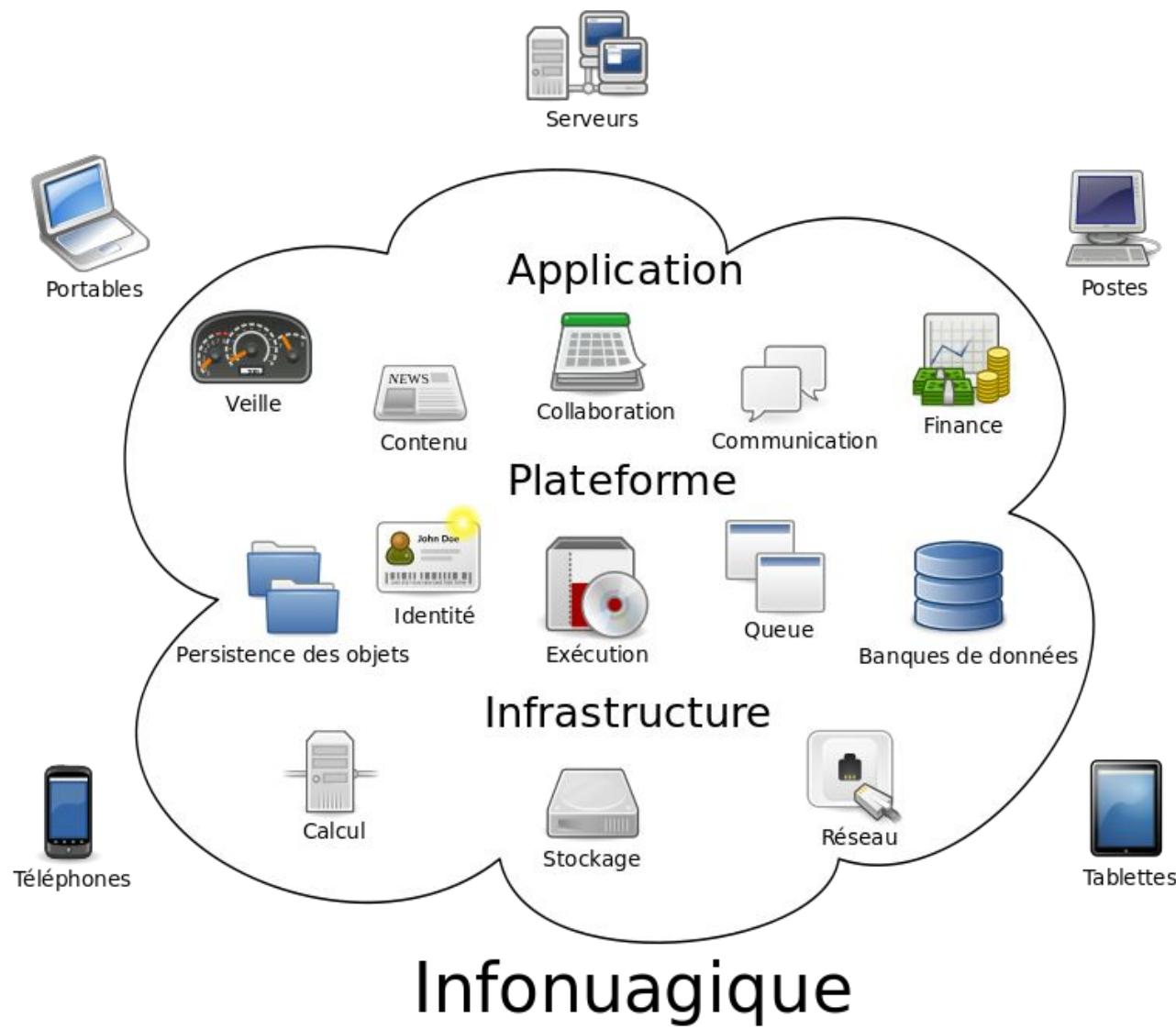
Échange avec les élèves

Qu'est-ce que
le Cloud Computing ?

Définition québécoise

infonuagique \ɛ̃.fo.ny.a.ʒik\ ou \ɛ̃.fo.nya.ʒik\ féminin

1. (Canada) (Néologisme) (Internet) Informatique en nuage. Utilisation de la mémoire et des capacités de calcul de différents ordinateurs et serveurs reliés par un réseau, parfois répartis dans le monde entier.



The NIST definition of Cloud Computing

Cloud computing is a model for enabling **ubiquitous, convenient, on-demand** network access to a shared pool of configurable **computing resources** (e.g., networks, servers, storage, applications, and services) that can be **rapidly provisioned** and released with minimal management effort or service provider interaction. This cloud model is composed of **five essential characteristics, three service models, and four deployment models.**

The NIST definition of Cloud Computing

5 essential characteristics

On-demand self-service

Broad network access

Resource pooling

Rapid elasticity

Measured service

The NIST definition of Cloud Computing

3 service models

Software as a Service (SaaS)

Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)

The NIST definition of Cloud Computing

4 deployment models

Private cloud

Community cloud

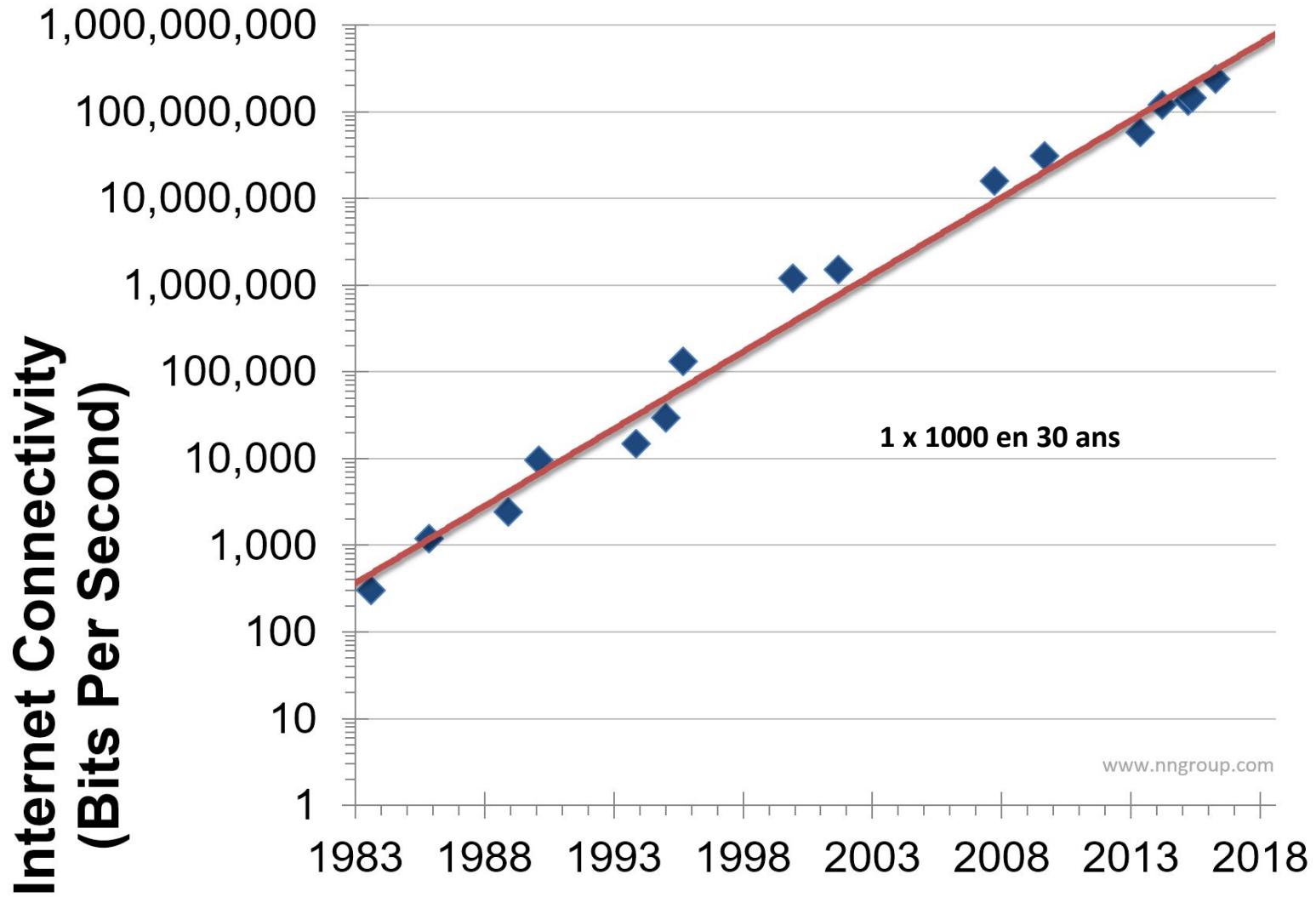
Public cloud

Hybrid cloud

Les origines du Cloud Computing

Quels furent les facteurs de
son émergence ?

La croissance de la bande passante



Apport d'une grande bande passante

(in NIST 5 essential characteristics)

On-demand self-service

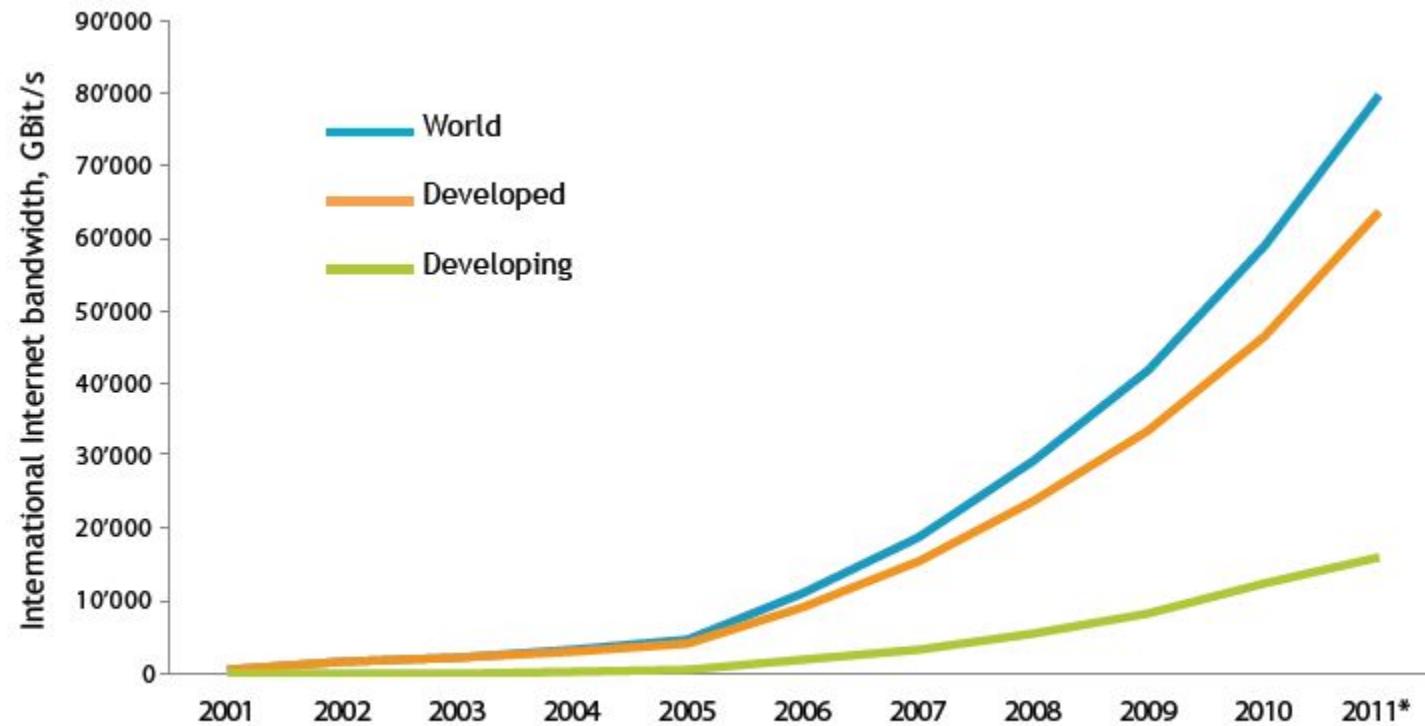
Broad network access

Resource pooling

Rapid elasticity

Measured service

Évolution de la bande passante globale dans le monde



Note: * Estimate

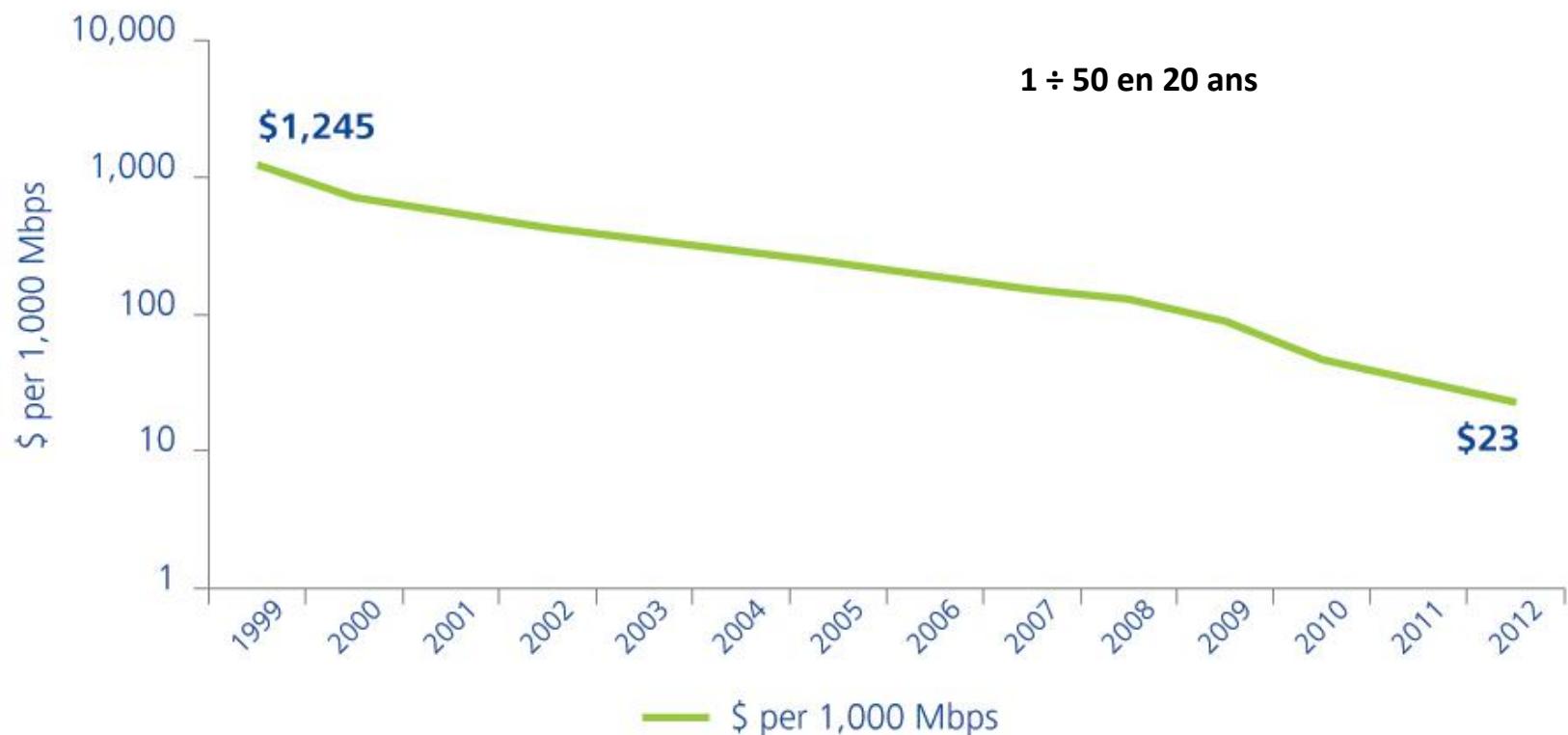
Source: ITU World Telecommunication/ICT Indicators database

Annual global IP traffic ... will reach **2.3 ZB*** per year by 2020 (* 1 ZB = 10^9 TB)

<http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html>

La décroissance du coût du trafic sur Internet

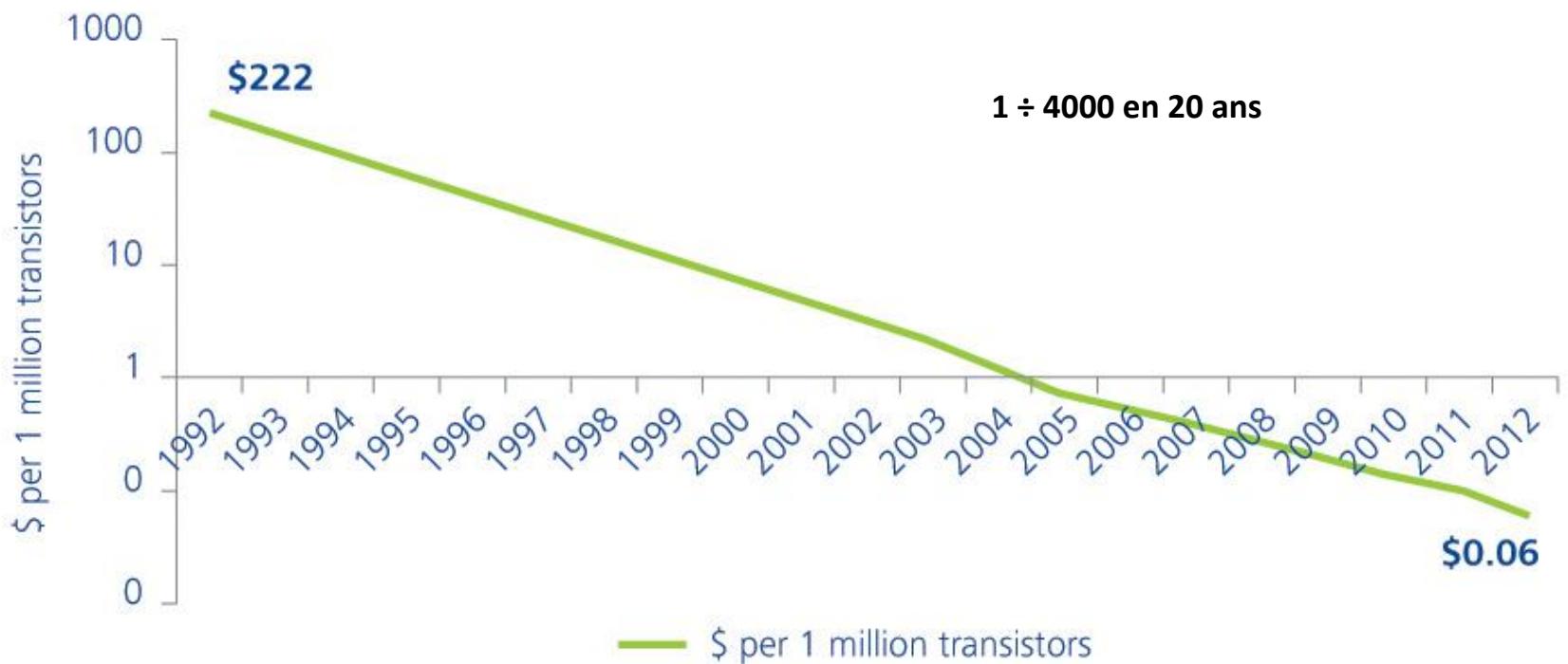
Figure 3. Bandwidth cost-performance (1999–2012)



Source: Leading technology research vendor

La décroissance du coût du CPU

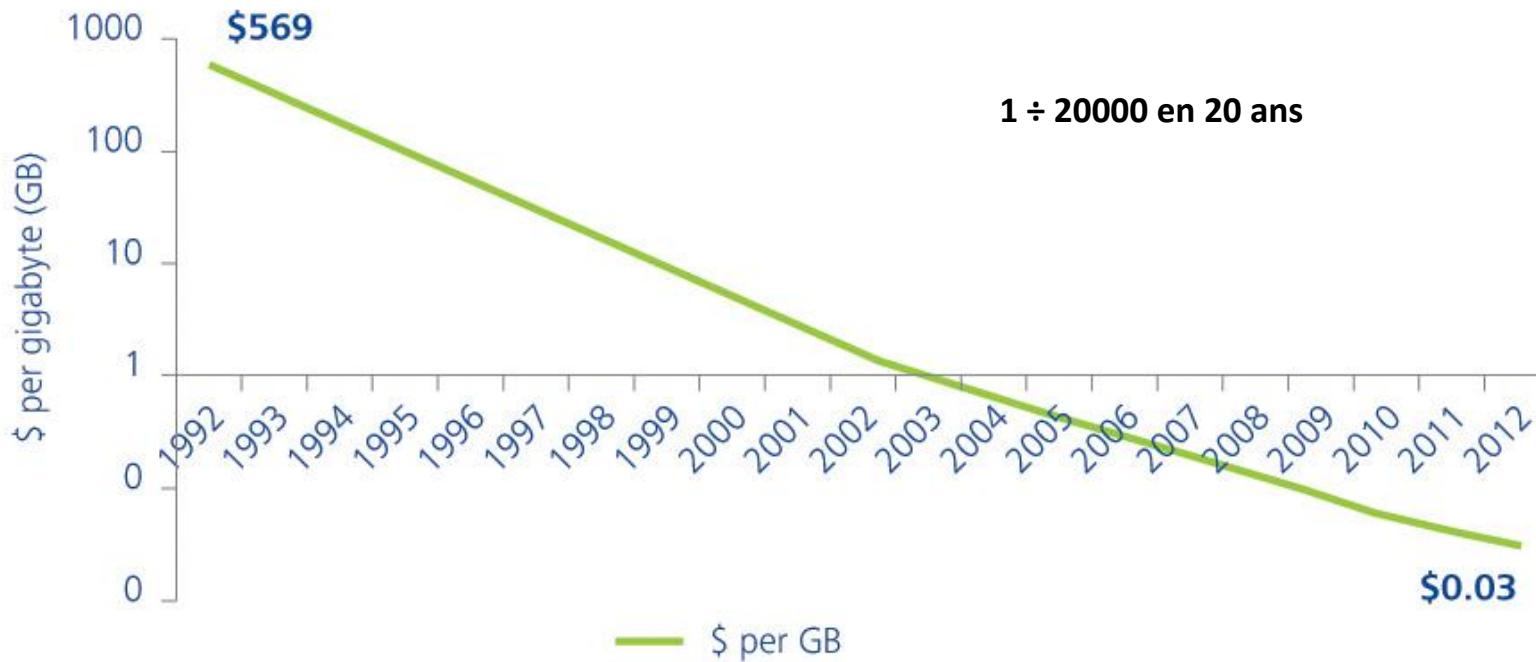
Figure 1. Computing cost-performance (1992–2012)



Source: Leading technology research vendor

La décroissance du coût du stockage

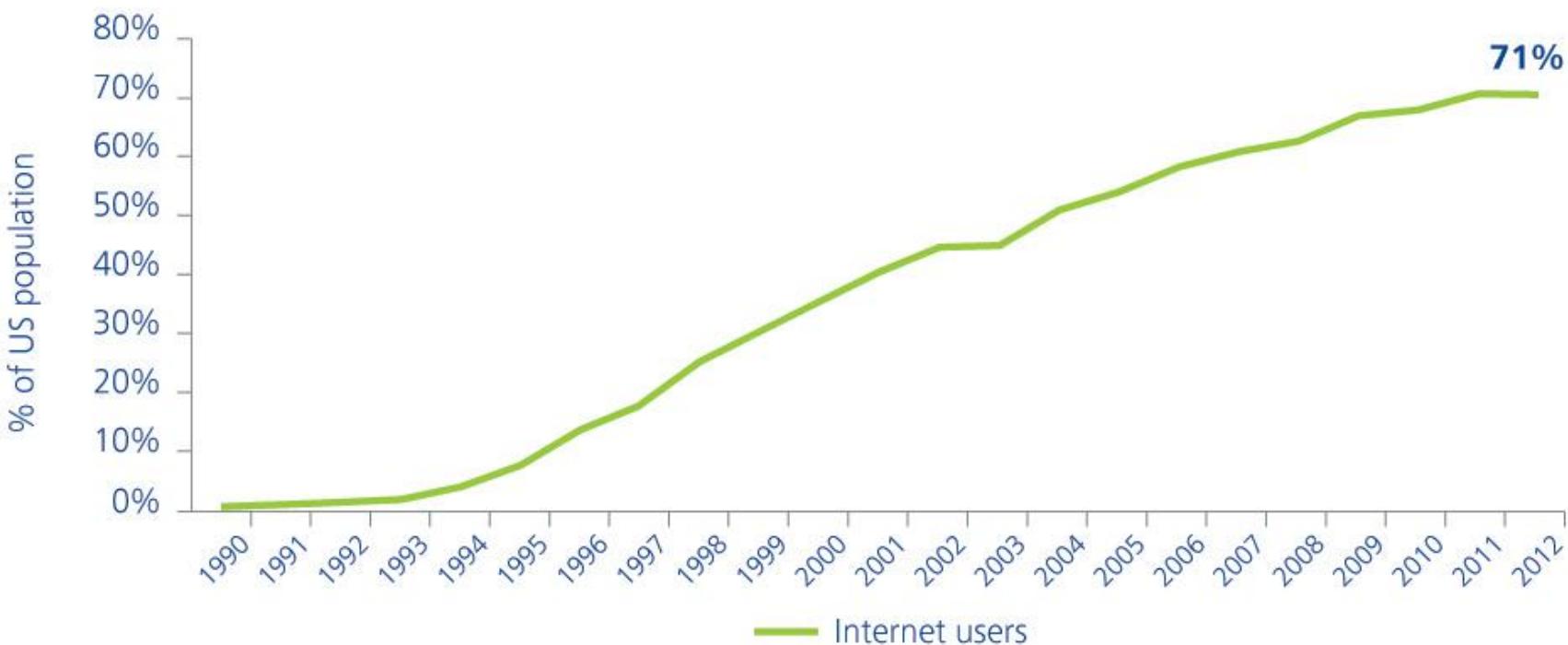
Figure 2. Storage cost-performance (1992–2012)



Source: Leading technology research vendor

L'accès à Internet banalisé

Figure 4. Internet users (1990–2012)



Source: comScore, Deloitte analysis

La généralisation de la virtualisation

- 1960 → 2000 : IBM de CP/CMS à z/VM
- 1979 : chroot (Unix)
- 1982 : chroot (BSD)
- **1999** : VMware (virtualisation pour x86)
- 2000 : FreeBSD Jail (*BSD)
- **2003** : Xen (Linux)
- 2005 : Solaris Zones (Solaris et dérivés)
- **2005/2006** : Intel-VT et AMD-V (virtualisation matérielle)
- 2006 : OpenVZ (Linux)
- **2007** : KVM (Linux)
- 2008 : LxC (Linux)
- 2008 : Hyper-V (Microsoft)
- **2013** : Docker

Apports de la virtualisation

(in NIST 5 essential characteristics)

On-demand self-service

Broad network access

Resource pooling

Rapid elasticity

Measured service

Avantages du Cloud

Ne plus s'occuper de son infrastructure
(se concentrer sur son cœur de métier)

Ne plus nécessiter de personnel dédié

Bénéficier de ressources adaptables à ses besoins

Rapidité de mise en œuvre

Ne plus craindre de pertes de données

Les craintes du Cloud

Sécurité (exposition des données sur le Net)

Confidentialité (intégrité du prestataire)

Localisation des données

(type de loi applicable => cf Patriot Act)

Prochaine loi européenne : Règlement Général de Protection des Données

<http://data.consilium.europa.eu/doc/document/ST-5455-2016-INIT/fr/pdf>

(notamment : responsabilités des entreprises et des prestataires)

Bases du cloud - IaaS



Datacenter



Serveurs

Virtualisation



The NIST definition of Cloud Computing

service model: IaaS

The capability provided to the consumer is to provision **processing, storage, networks**, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications.

The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls).

Naissance du IaaS : 2006

Amazon

d'une infrastructure pour la vente en ligne

à



AWS : une infrastructure mondiale



Region & Number of Availability Zones

AWS GovCloud	(2)	Europe
US West		Ireland (3), Frankfurt (2), London (2)
Oregon (3), Northern California (3)		
US East		Asia Pacific
Northern Virginia (5), Ohio (3)		Singapore (2), Sydney (3), Tokyo (3), Seoul (2), Mumbai (2)
Canada		
Central (2)		China
		Beijing (2)
South America		
São Paulo (3)		



New Region (coming soon)

Paris

Ningxia

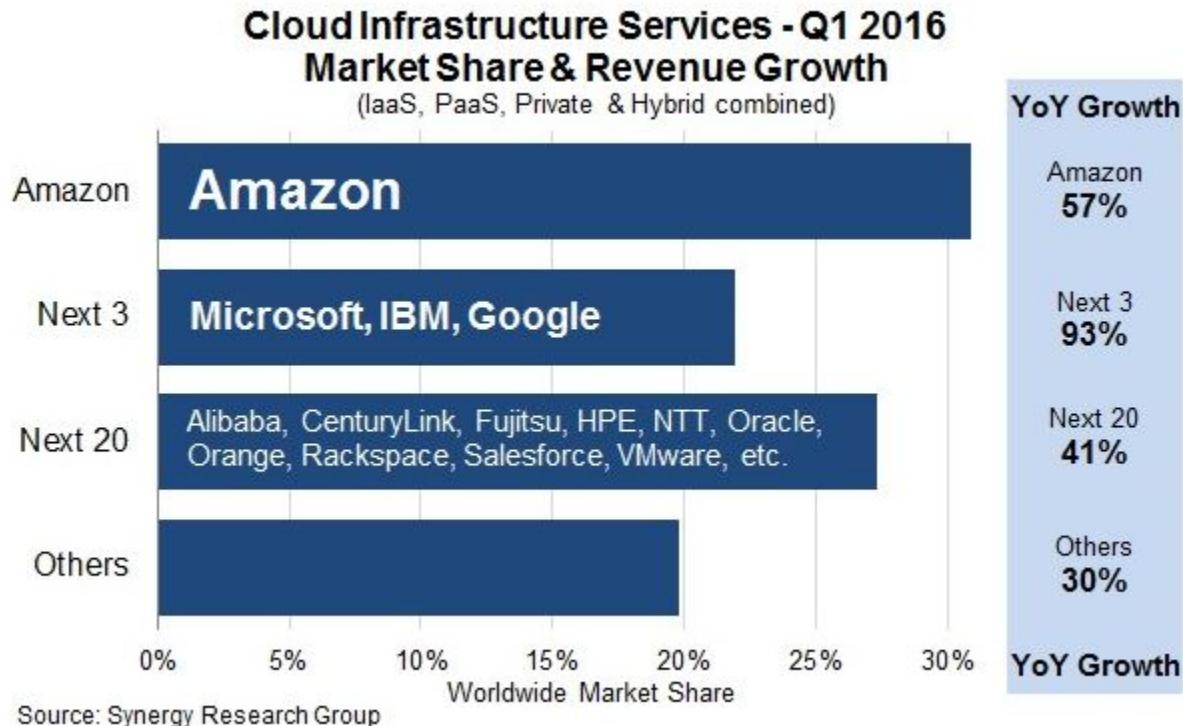
AWS : une offre de services pléthorique

The screenshot shows the AWS Management Console homepage. At the top, there's a navigation bar with links for Services, Resource Groups, Notifications (with a bell icon), Dominique Rodrigues (user profile), Ireland (region dropdown), and Support. Below the navigation is a search bar with placeholder text "Find a service by name (for example, EC2, S3, Elastic Beanstalk)." To the right of the search bar is a "Helpful tips" section with two items: "Manage your costs" (with a graph icon) and "Create an organization" (with a cube icon). Further down is a "What's new?" section featuring "Announcing Amazon Chime" and "Introducing Elastic Volumes for Amazon EBS". At the bottom right is a "See all" link. The main content area is titled "AWS services" and contains a grid of service icons and names. The services listed are:

- Compute**: EC2, EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, Batch
- Storage**: S3, EFS, Glacier, Storage Gateway
- Database**: RDS, DynamoDB, ElastiCache, Redshift
- Networking & Content Delivery**: VPC, CloudFront, Direct Connect, Route 53
- Developer Tools**: CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray
- Management Tools**: CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor, Managed Services
- Security, Identity & Compliance**: IAM, Inspector, Certificate Manager, Directory Service, WAF & Shield, Compliance Reports
- Internet of Things**: AWS IoT
- Contact Center**: Amazon Connect
- Game Development**: Amazon GameLift
- Mobile Services**: Mobile Hub, Cognito, Device Farm, Mobile Analytics, Pinpoint
- Application Services**: Step Functions, SWF, API Gateway, Elastic Transcoder
- Messaging**: Simple Queue Service, Simple Notification Service

At the very bottom right, there's a "Have feedback?" link.

AWS : leader du marché IaaS *et des challengers en forte croissance*



Azure : la riposte Microsoft

The screenshot shows the Microsoft Azure portal interface. At the top, there's a browser header with the title "Tableau de bord" and the URL "https://portal.azure.com/#dashboard/private/1e42acc0-0bcc-4471-ab5f-c". To the right of the URL is a user profile icon labeled "Dominique". Below the header is the Microsoft Azure logo and a search bar with the placeholder "Search resources". To the right of the search bar are several icons: a bell with a "7", a gear, a smiley face, a question mark, and a user profile icon.

The main area is titled "Tableau de bord" and includes the following sections:

- All resources ALL SUBSCRIPTIONS**: A section showing "No resources to display".
- Service health MY RESOURCES**: A section showing a world map with a "refresh" icon.
- cory1**: A section with a dark gray box containing the word "Deleted" and a small monitor icon.
- Marketplace**: A section with a blue shopping bag icon.
- Help + support**: A section with a blue person icon.

On the left side, there's a vertical navigation menu with the following items:

- New**
- Dashboard**
- Resource groups**
- All resources**
- Recent**
- App Services**
- Virtual machines**
- SQL databases**
- Security Center**
- Subscriptions**
- Azure Active Directory**
- Monitor**
- Billing**
- Help + support**
- Advisor**
- More services >**

Azure : une stratégie “market place”

Sécurisé | https://portal.azure.com/#blade/Microsoft_Azure_Marketplace/GalleryFeat

Microsoft Azure New > Compute > Marketplace > Compute

Marketplace

Compute

Everything

Compute

Networking

Storage

Web + Mobile

Databases

Intelligence + analytics

Internet of Things

Enterprise Integration

Security + Identity

Developer tools

Monitoring + Management

Add-ons

Containers

Blockchain

Filter

Search Compute

Windows Server

Red Hat Enterprise Linux

Ubuntu Server

SQL Server 2016 SP1 Enterprise on Microsoft

Virtual machine scale set

SharePoint Server 2016 Trial

Microsoft

RedHat

Canonical

Microsoft

Microsoft

More

Virtual Machine Images

Linux Data Science Virtual Machine

Citrix XenApp 7.13 Trial

SQL Server vNext on Red Hat

Veeam Cloud Connect for the Veeam

Dynamics AX 2012 R3 (preview)

VoipNow 3.6.0

Microsoft

Citrix

Microsoft

Veeam

Microsoft

4PSA

More

What's new

VARNISH PLUS

More

Compute

GCE : la concurrence de Google

The screenshot shows the Google Cloud Platform (GCP) dashboard for the project "kuberlearn".

Left sidebar (Navigation):

- Accueil
- API: Gestionnaire d'API, Facturation, Cloud Launcher, Assistance, IAM et admin
- CALCUL: App Engine, Compute Engine, Container Engine, Cloud Functions
- Réseau
- STOCKAGE: Bigtable, SQL, Datastore, Stockage

Middle section (Dashboard):

- TABLEAU DE BORD:** Informations sur le projet (kuberlearn, ID de projet: kuberlearn #23191206800), IAM (Quotas, Comptes de service, Libellés, Confidentialité/Sécurité de GCP, Paramètres, Clés de chiffrement, Proxy sensible à l'identité (IAP)), Trace (Aucune donnée Trace des sept derniers jours, Premiers pas avec Stackdriver Trace), Premiers pas.
- ACTIVITÉ:** API (Requêtes (requêtes par seconde)) graph showing a spike from ~0.05 to ~0.5 requests per second between 04:07 and 05:07 on April 18.
- PARTENAIRES:** Accéder à l'aperçu des API
- Etat de Google Cloud Platform:** Fonctionnement normal de tous les services, Accéder à Cloud Status Dashboard
- Facturation:** 7,81 €, Coût approximatif du mois à ce jour, Afficher les frais détaillés
- Error Reporting:** Aucun signe d'erreur. Avez-vous configuré Error Reporting ?, Configurer Error Reporting

Digital Ocean : le petit poucet qui monte

The screenshot shows the DigitalOcean 'Create Droplets' interface. At the top, there's a navigation bar with links for 'Droplets', 'Images', 'Networking', 'Monitoring', 'API', and 'Support'. A user profile icon for 'Dominique' is also visible.

Create Droplets

Choose an image ?

[Distributions](#) [One-click apps](#)

Ubuntu Select version	FreeBSD Select version	Fedora Select version	Debian 8.7 x64 Select version	CoreOS Select version	CentOS Select version
--------------------------	---------------------------	--------------------------	-------------------------------------	--------------------------	--------------------------

Choose a size

\$ 5/mo \$0.007/hour 512 MB / 1 CPU 20 GB SSD disk 1000 GB transfer	\$ 10/mo \$0.015/hour 1 GB / 1 CPU 30 GB SSD disk 2 TB transfer	\$ 20/mo \$0.030/hour 2 GB / 2 CPUs 40 GB SSD disk 3 TB transfer	\$ 40/mo \$0.060/hour 4 GB / 2 CPUs 60 GB SSD disk 4 TB transfer	\$ 80/mo \$0.119/hour 8 GB / 4 CPUs 80 GB SSD disk 5 TB transfer	\$ 160/mo \$0.238/hour 16 GB / 8 CPUs 160 GB SSD disk 6 TB transfer
---	---	--	--	--	---

Les projets Open Source pour le IaaS

CloudStack

OpenNebula

OpenStack

CloudStack

CloudStack | Open Source X

www.cloudstack.org

cloudstack
open source cloud computing

LOGIN REGISTER

Apache Podling | Documentation | Bugs

Home | Software | Download | Blog | Discuss | Contribute | Partners | About

 BUILD A CLOUD DAY

LEARN HOW TO BUILD, MANAGE AND DEPLOY CLOUD COMPUTING ENVIRONMENTS WITH OPEN SOURCE SOFTWARE THE DEVOPS WAY.

GET FIRSTHAND INFORMATION FROM SPEAKERS FROM PUPPETLABS | ZENOSS | XEN.ORG | RED HAT GLUSTER | ENSTRATUS | CLOUDSTACK

SIGN UP NOW

Open Source Cloud Computing with Apache CloudStack

Apache CloudStack is open source software written in java that is designed to deploy and manage large networks of virtual machines, as a highly available, scalable cloud computing platform. CloudStack current supports the most popular hypervisors VMware, Oracle VM, KVM, XenServer and Xen Cloud Platform. CloudStack offers three ways to manage cloud computing environments: a easy-to-use web interface, command line and a full-featured RESTful API.

Latest Forum Posts

 billing for cs 4
In Installation
at 04:10 on Oct 15, 2012 (EDT)

 Question on Cloudstack

Latest Blog Posts

CloudStack Configuration Vulnerability Discovered
A configuration vulnerability has been discovered in CloudStack that could allow a malicious user to execute arbitrary CloudStack API calls, such as deleting all VMs being managed by

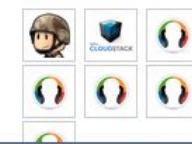
Upcoming Events

 Geek Speak Local / Paris
Other Events | 10/18
rue des Terres au curé
75013 PARIS, France
Tuesday, Oct 16, 2012

Cloudstack Connect

Who's Online



CloudStack

CloudStack | Open Source X

www.cloudstack.org

cloudstack
open source cloud computing

LOGIN REGISTER

Apache Podling | Documentation | Bugs

Home | Software | Download | Blog | Discuss | Contribute | Partners | About

OPSCODE TATA COMMUNICATIONS InstaCompute RIGHT SCALE TREND MICRO jclouds puppet labs ARISTA SUNGARD big switch networks Alcatel-Lucent Engine Yard JUNIPER NETWORKS

intel nexenta ServiceMesh GLUSTER Go Daddy DATAPIPE enSTRATUS cloudsoft

NetApp ServiceMesh Hortonworks ushareSoft Path

EQUINIX

THESE COMPANIES ARE CREATING CLOUD SOLUTIONS WITH CLOUDSTACK, MAYBE YOU SHOULD TOO? BECOME A PARTNER

Open Source Cloud Computing with Apache CloudStack

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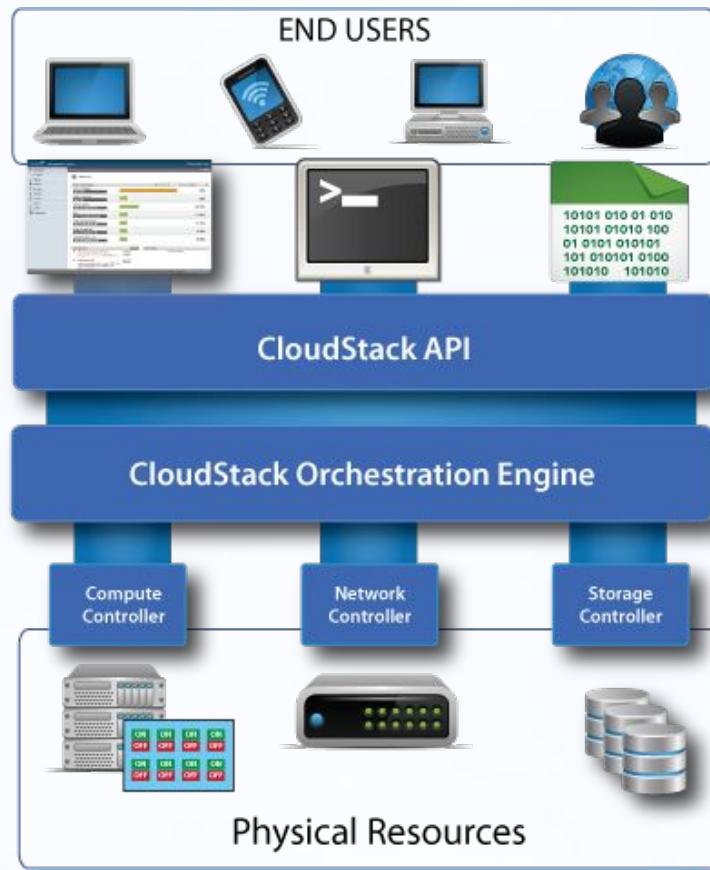
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Who's Online

CloudStack

CloudStack



CloudStack

CloudStack

0 Notifications Default View Project View a ▾

Dashboard Instances Storage Network Templates Accounts Domains Events System Projects Global Settings Configuration

General Alerts view all

System Alert... VM (name: i-5-1683-VM, id: 1683) stopped unexpecte...

System Alert... Unable to restart r-1395-VM which was running on h...

System Alert... Unable to restart r-1410-VM which was running on h...

System Alert... Unable to restart i-31-1424-VM which was running o...

System Alert... Unable to restart i-53-1546-VM which was running o...

Host Alerts view all

Host Alert... VM (name: i-5-1683-VM, id: 1683) stopped unexpecte...

Host Alert... Unable to restart r-1395-VM which was running on h...

Host Alert... Unable to restart r-1410-VM which was running on h...

Host Alert... Unable to restart i-31-1424-VM which was running o...

Host Alert... Unable to restart i-53-1546-VM which was running o...

System Capacity

Zone: zone	 50% Public IP 2 / 4	Zone: zone	 50% Reserved System IP 40 / 10
Zone: zone	 10% Storage Used 15 GB / 50 GB	Zone: zone	 10% Secondary Storage 15 GB / 50 GB
Zone: zone	 25% Domain Router 100 / 30	Zone: zone	 15% Host 100 gHZ / 15.5 gHZ

CloudStack

CloudStack

0 Notifications Default View Project View a ▾

Network > sumi-network-vlan-100 > IP Addresses > 72.52.67.62 [Source NAT] Refresh

IP

72.52.67.77
72.52.67.62 [Source NAT]
72.52.67.52
72.52.67.51
72.52.67.46 [Source NAT]
72.52.67.45 [Source NAT]
72.52.67.42
72.52.67.37
72.52.67.31 [Source NAT]
72.52.67.23
72.52.67.22
72.52.67.20
72.52.126.69 [Source NAT]
72.52.126.68 [Source NAT]
72.52.126.67 [Source NAT]

Details Configuration

The diagram illustrates the CloudStack firewall architecture. At the top is a cloud icon labeled "Internet". A vertical line descends from it to a rectangular box labeled "Firewall". Below the "Firewall" box is a blue button labeled "View All". From the bottom of the "Firewall" box, two horizontal lines branch out to two separate boxes: "Load Balancing" on the left and "Port Forwarding" on the right. Each of these boxes also has a "View All" button at its bottom. Arrows point from the "Firewall" box down to each of the "Load Balancing" and "Port Forwarding" boxes.



Dashboard



Add instance

- 1 Setup
- 2 Select a template
- 3 Service Offering
- 4 Data Disk Offering
- 5 Network
- 6 Review

Please review the following information and confirm that your virtual instance is correct before launch

Name (optional)	VM1
Add to group (optional)	
Zone	San Jose
Hypervisor	(None)
Template	Windows 8 (64 bit)
Service offering	Small Instance
Data disk offering	Small
Primary network	(None)

[Previous](#)[Cancel](#)

Launch VM

ID	Name	User	Location	Status	Action
i-27-118-VM	DEV	San Jose	Stopped		
i-27-1274-VM	Yali	San Jose	Running		



Dashboard

Storage



Instances



Storage



Network



Templates



Accounts



Domains



Events



System



Projects



Global Settings



Configuration

Select view: Volumes

Filter By: My volumes



+ Add volume

Name

Type

Zone

Size

Status

Actions

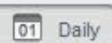
Recurring Snapshots

You can setup recurring snapshot schedules by selecting from the available options below and applying your policy preference.

Schedule:



Hourly



01 Daily



1-7 Weekly



Monthly

Time

1

00

AM

Timezone:

[UTC-12:00] GMT-12:00

Keep:

5

snapshot(s)

Add

Scheduled Snapshots

Time: 10 min past the hr

Timezone:
[UTC-11:00] Samoa Standard Time

Keep: 23



Time: 12:33 AM

Day 31 of month

Timezone:
[UTC-11:00] Samoa Standard Time

Keep: 23



Done

ROOT-1713

ROOT

Chicago

10485760000

Ready

ROOT-1715

ROOT

Chicago

10485760000

Ready

OpenNebula

The screenshot shows a web browser displaying the OpenNebula.org homepage. The page features a large "OpenNebula" logo at the top, followed by the subtext "The Open Source Solution for Data Center Virtualization". A navigation bar below includes links for Commercial, Contact, and various community and support resources. A green diagonal banner on the right side announces "ONE 3.8 Beta is Out!". The main content area highlights "The Cloud Data Center Management Solution" and lists several key features: Open, Adaptable, Proven, Powerful, Interoperable, No Lock-in, Very Light, and Enterprise-ready. At the bottom, a section titled "Our Users are the Industry & Research Leaders" is partially visible.

OpenNebula - The Open Source Solution for Data Center Virtualization

Commercial | Contact | [RSS](#) [LinkedIn](#) [Twitter](#) [Facebook](#) [YouTube](#) [Google+](#) [GitHub](#) [SourceForge](#) [Bitbucket](#) [Email](#)

Home About Documentation Software Support Community Try out Marketplace Users Blog

ONE 3.8 Beta is Out!

The Cloud Data Center Management Solution

Most solid, powerful and flexible open-source alternative to proprietary cloud management platforms

Open
Fully open-source (not open-core) software released under the Apache license

Adaptable
Highly customizable to fit into your data center and leverage existing IT investments

Proven
Mature, widely used, 5,000 downloads per month, and many massive scale production deployments

Powerful
Innovative, advanced enterprise-class functionality for private clouds and data center virtualization

Interoperable
Choice of interfaces, from open cloud, like OCCI, to de-facto standards, like AWS

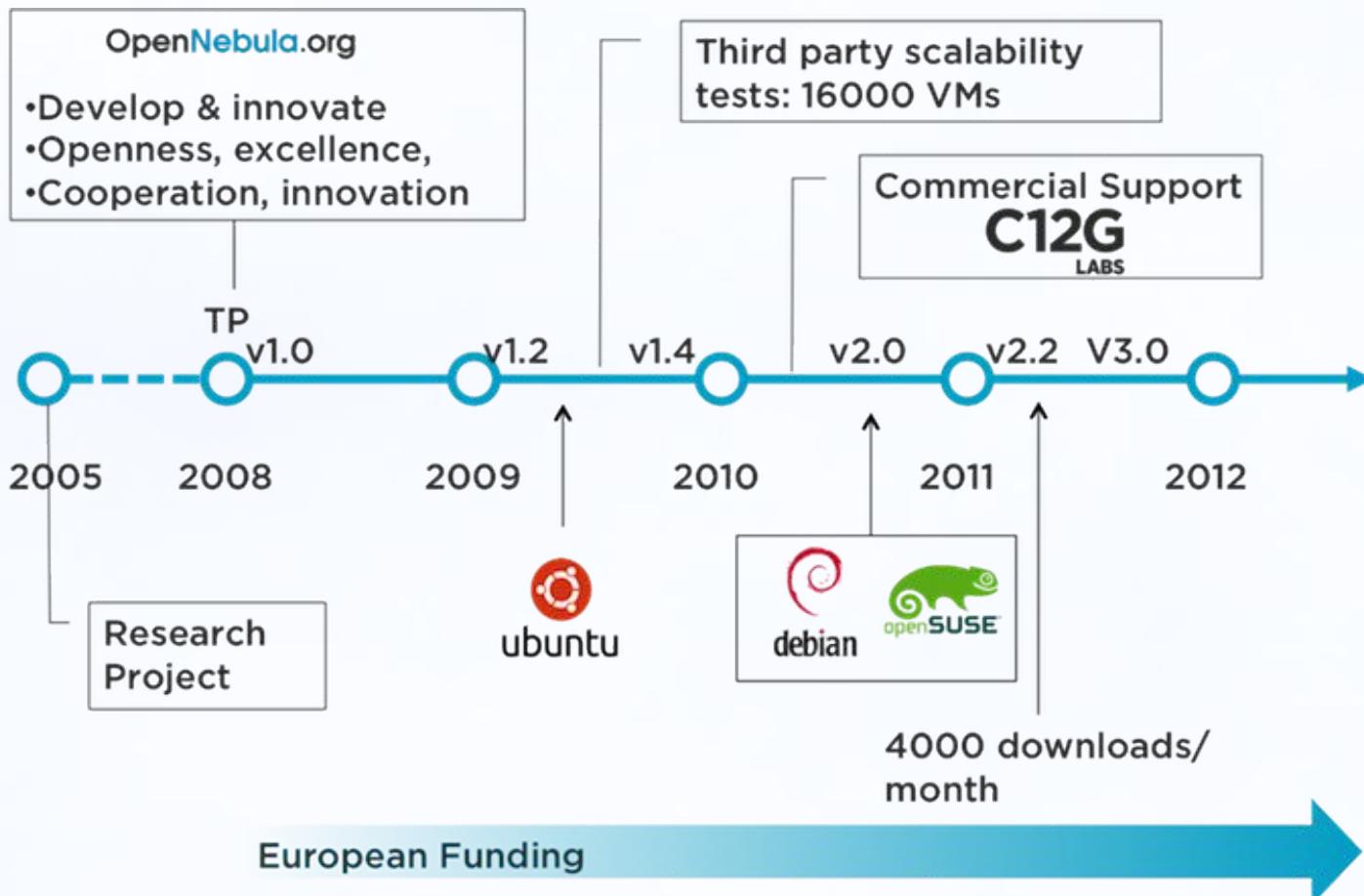
No Lock-in
Broad infrastructure support and platform independent on major hypervisors, VMware, KVM and Xen

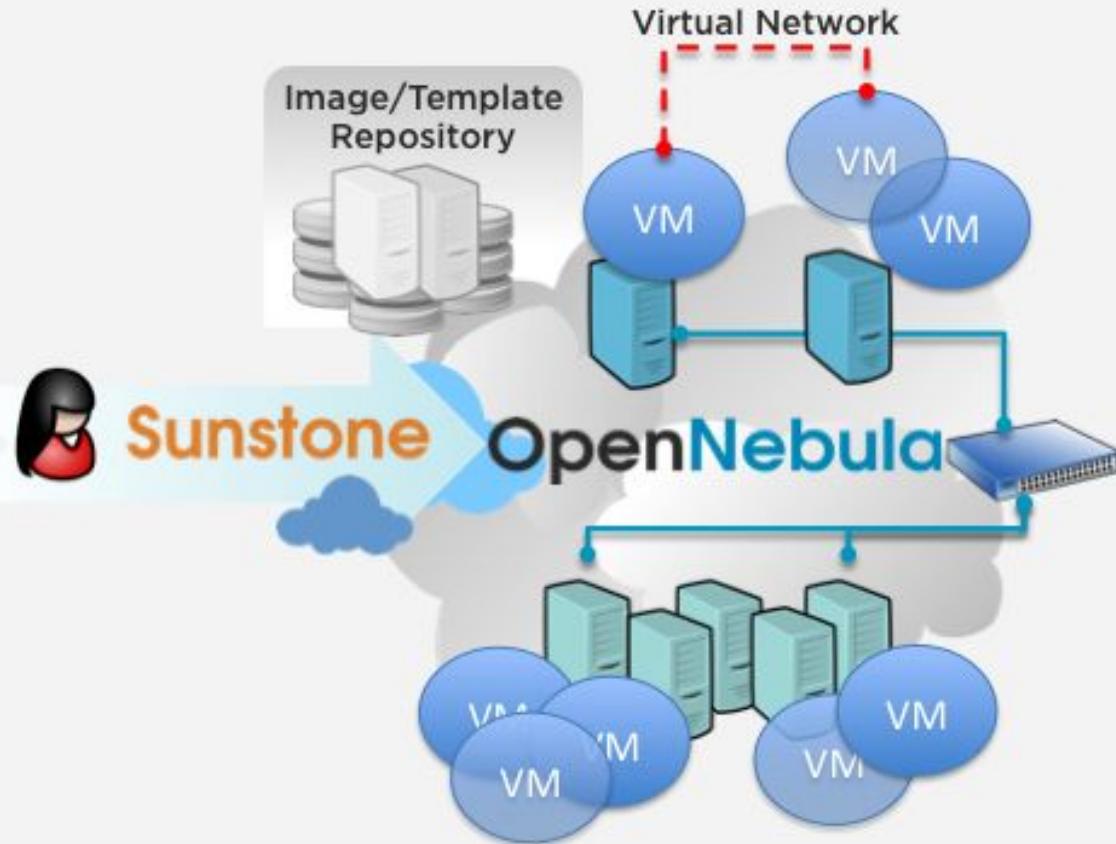
Very Light
Highly efficient, easy to install and update, with packages for the main Linux distributions

Enterprise-ready
Your scalable and stable enterprise cloud in a single install with community and commercial support

Our Users are the Industry & Research Leaders

OpenNebula





OpenNebula

The screenshot shows the OpenNebula Self-Service web interface. The left sidebar has a dark theme with the following navigation options:

- Tableau de bord
- Machines virtuelles** (highlighted in blue)
- Stockage
- Réseaux
- Configuration

The main content area displays a list of virtual machines. At the top of this list is a header with buttons: **+ Nouveau**, **Éteindre**, **Action précédente**, and **Supprimer**. Below the header, there are filters: **Affiche** (set to 10), **éléments**, **Tout**, **ID**, **Nom / État**, and **IP**. A search bar labeled **Rechercher:** is also present. The list itself is currently empty and displays the message **Pas d'enregistrement**.

To the right of the list, a large form is open for creating a new virtual machine. The form fields include:

- Créer une machine virtuelle**
- Nom MV:**
- Type d'instance:**
- Images:** A list of available images:
 - Ubuntu 11.04 (id: 1)
 - CentOS-5.5-64- (id: 2)
 - timage (id: 4)
 - ubuntu 10.04 (id: 3)
- Réseaux:** A list of available networks:
 - public_vnet (id: 1)
 - Attune (id: 7)
 - public_net2 (id: 2)
- Créer # MVs:**

At the bottom of the form are two buttons: **Fermer** (with a close icon) and **Créer** (with a checkmark icon).

At the very bottom of the page, a footer bar reads **OpenNebula 3.7.80 by C12G Labs.**

OpenStack : le IaaS compatible AWS

The screenshot shows the official OpenStack website at www.openstack.org. The page features a header with the OpenStack logo and navigation links for Home, Software, User Stories, Community, Foundation, Profile, Blog, Wiki, and Documentation. Below the header, a main banner states "Open source software for building private and public clouds." The "Software" section highlights the OpenStack Software stack, showing icons for Compute (green), Networking (purple), and Storage (blue). It includes links to "About OpenStack Software..." and "Meet Our Community". The "Community" section shows statistics: 6024 people and 87 countries. A callout box for "Cisco WebEx Runs OpenStack" provides a case study link. At the bottom, there's a "Latest Activity" feed, a "What is OpenStack?" section, and a "Come See Us" section with a "NEXT UP: Swiss OpenStack user" entry.

Home » OpenStack OpenS ×

www.openstack.org

openstack™
CLOUD SOFTWARE

Home Software User Stories Community Foundation Profile Blog Wiki Documentation

Open source software for building private and public clouds.

Software

OpenStack Software delivers a massively scalable cloud operating system.

Compute Networking Storage

About OpenStack Software...

Community

Join our global community of technologists, developers, researchers, corporations and cloud computing experts.

6024 PEOPLE
87 COUNTRIES

Cisco WebEx Runs
OpenStack

Read the case study about WebEx and other OpenStack production clouds.

User Stories

Latest Activity

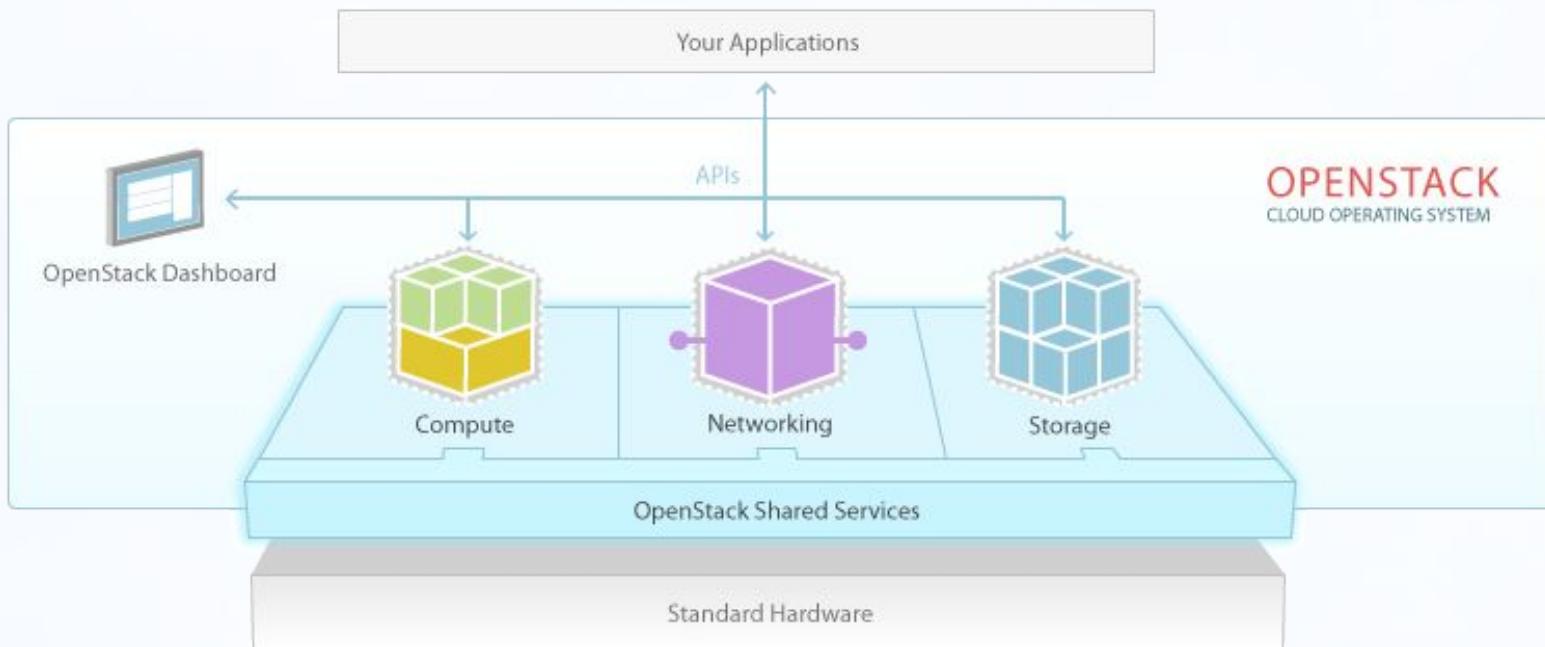
What is OpenStack?

web Back from San Diego OpenStack Summit 20 October 2012 9:36 pm

Come See Us

NEXT UP: Swiss OpenStack user

OpenStack



OpenStack

Project Users - OpenStack D X

Logged in as: admin Settings Sign Out

Users for Project: demo

Users For Project

Remove Users

<input type="checkbox"/>	ID	User Name	Email	Enabled	Actions
<input type="checkbox"/>	779d6a4a2bfe407caa62256d3e9fb4ba	admin	admin@example.com	True	<button>Remove User</button>
<input type="checkbox"/>	fb9e9667d6eb4ba59ac2bbc885d7d890	demo	demo@example.com	True	<button>Remove User</button>

Displaying 2 items

Add New Users

ID	User Name	Email	Enabled	Actions
32d92034862d4c73ad25b83f22335479	nova	nova@example.com	True	<button>Add To Project</button>
c8e76d5da6474adba9cb2161802105df	glance	glance@example.com	True	<button>Add To Project</button>
4b35949bd96d4804aac81c55d196193b	swift	swift@example.com	True	<button>Add To Project</button>
e2b1ab40b9234a5889c91f11f7f8cc52	scott	-	True	<button>Add To Project</button>
0f8f6378bebe24b8290f6ff80cf5683d3	jesse	-	True	<button>Add To Project</button>
750bbf9ac4534c2abdd496811be2f4cf	dolph	-	True	<button>Add To Project</button>

OpenStack

The screenshot shows the OpenStack dashboard titled "Instances & Volumes". The user is logged in as "admin". A success message at the top indicates "Success: Instance 'test-www.demo.com' launched.".

The "Instances" section displays four instances:

Instance Name	IP Address	Size	Status	Task	Power State	Actions
test-www.demo.com	10.4.128.20	4GB RAM 2 VCPU 10.0GB Disk	Active	None	Running	<button>Edit Instance</button>
test-www.demo.com	10.4.128.19	4GB RAM 2 VCPU 10.0GB Disk	Build	Spawning	No State	<button>Edit Instance</button>
myserve	10.4.128.18	2GB RAM 1 VCPU 10.0GB Disk	Active	None	Running	<button>Edit Instance</button>
myserver	10.4.128.16	2GB RAM 1 VCPU 10.0GB Disk	Active	None	Running	<button>Edit Instance</button>

The "Volumes" section is partially visible below, showing a table header:

Name	Description	Size	Status	Attachments	Actions
------	-------------	------	--------	-------------	---------

OpenStack : installation/test via une VM

- <http://devstack.org/guides/single-vm.html>
- Choix d'OS : Ubuntu 12.10

Launching with using Userdata

The userdata script grabs the latest version of DevStack via git, creates a minimal `localrc` file and kicks off `stack.sh`.

```
#!/bin/sh
apt-get update
apt-get install -qqy git
git clone https://github.com/openstack-dev/devstack.git
cd devstack
echo ADMIN_PASSWORD=password > localrc
echo MYSQL_PASSWORD=password >> localrc
echo RABBIT_PASSWORD=password >> localrc
echo SERVICE_PASSWORD=password >> localrc
echo SERVICE_TOKEN=tokentoken >> localrc
echo FLAT_INTERFACE=br100 >> localrc
./stack.sh
```

OpenStack : installation/test via une VM

```
root@nclhost-10-11-180-20: ~
Fichier Édition Affichage Rechercher Terminal Aide
root@nanoCloud:/var/nanocloud/power/bin# ./list_running_vm.ush

nanoCloud® Power - Running VM(s): 1

PID  VM NAME/UUID                                     UPTIME (d-h:mm:s)  MEM(unit)
8417 openstack-femto-free_use-10.11.180.20-linux-ubuntu-12.10-x86_64 07:37      42 MB
97880460-3a91-4a89-a8c6-2af79242b8c7

root@nanoCloud:/var/nanocloud/power/bin# ./enter_vm.ush 97880460-3a91-4a89-a8c6-2af79242b8c7
Welcome to Ubuntu 12.10 (GNU/Linux 3.5.0-17-generic x86_64)

 * Documentation: https://help.ubuntu.com/

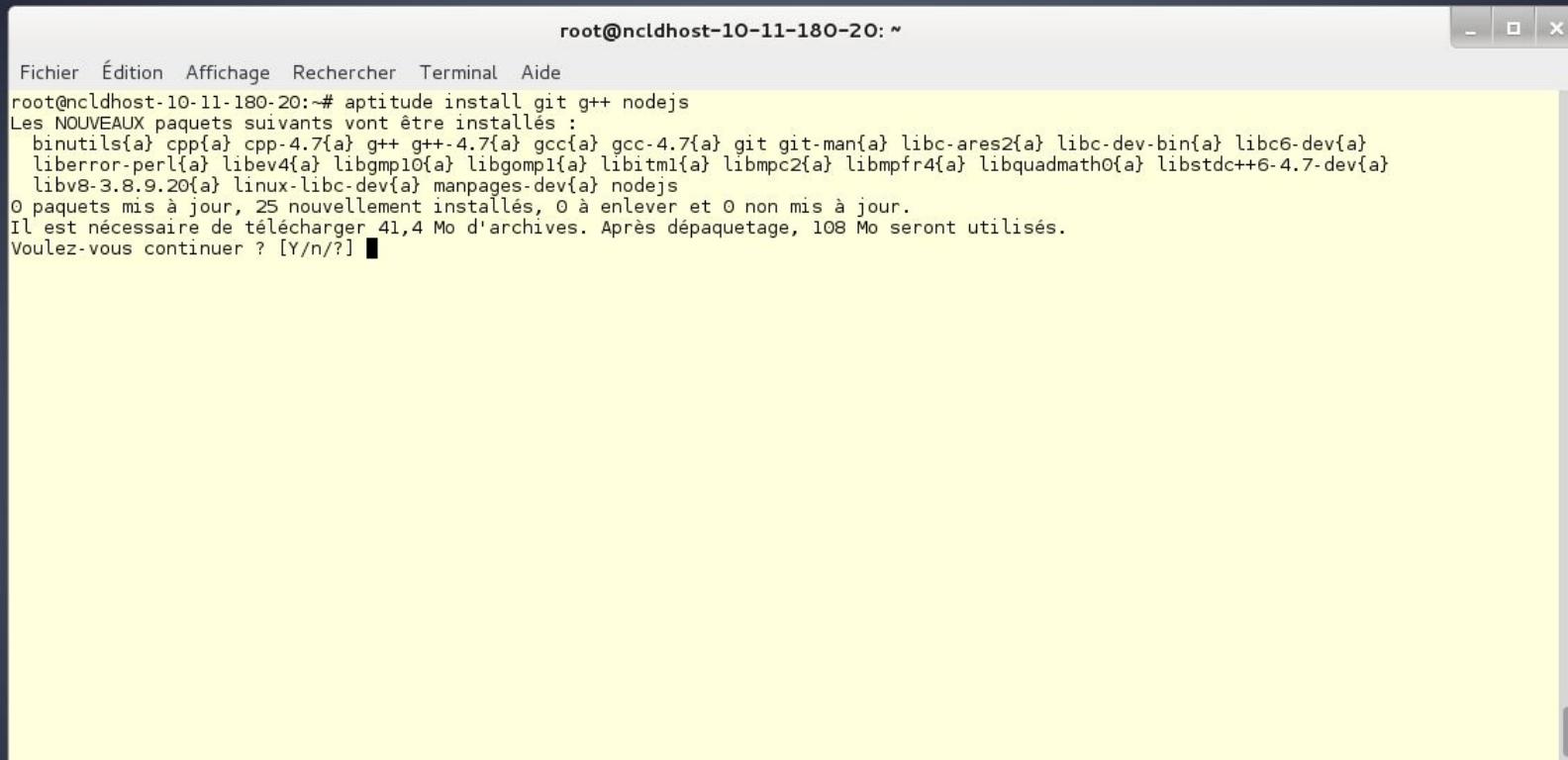
 System information as of Tue Oct 23 01:27:39 CEST 2012

 System load: 0.0          Processes:      69
 Usage of /: 12.0% of 8.99GB  Users logged in:  0
 Memory usage: 29%          IP address for eth0: 10.11.180.20
 Swap usage:  0%

 Graph this data and manage this system at https://landscape.canonical.com/

Last login: Tue Oct 23 01:20:12 2012 from 10.11.180.19
root@nclhost-10-11-180-20:~#
```

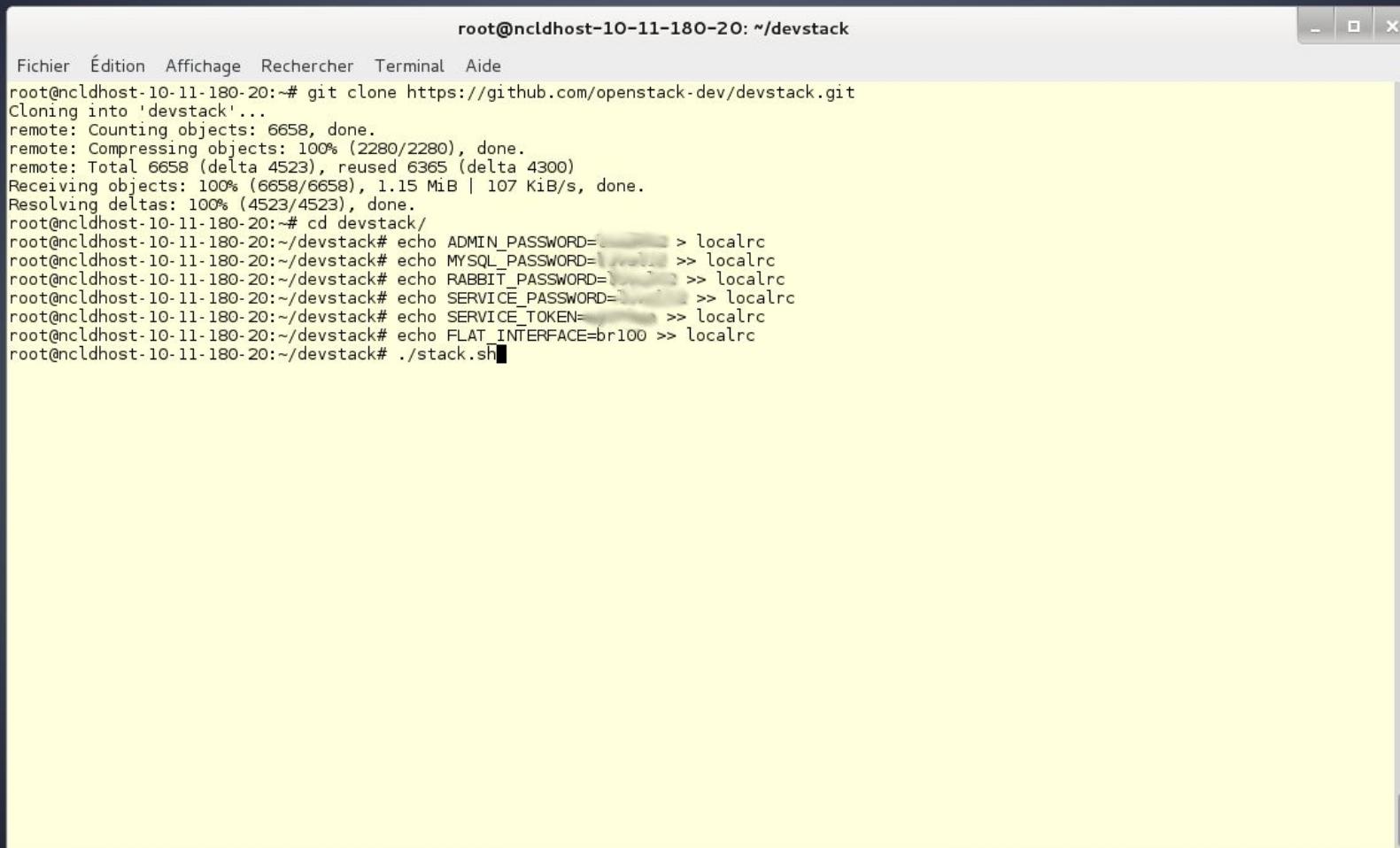
OpenStack : installation/test via une VM



A screenshot of a terminal window titled "root@nclhost-10-11-180-20: ~". The window contains the following text:

```
Fichier Édition Affichage Rechercher Terminal Aide
root@nclhost-10-11-180-20:~# aptitude install git g++ nodejs
Les NOUVEAUX paquets suivants vont être installés :
  binutils{a} cpp{a} cpp-4.7{a} g++ g++-4.7{a} gcc{a} gcc-4.7{a} git git-man{a} libc-ares2{a} libc-dev-bin{a} libc6-dev{a}
  liberror-perl{a} libev4{a} libgmp10{a} libgomp1{a} libitm1{a} libmpc2{a} libmpfr4{a} libquadmath0{a} libstdc++-4.7-dev{a}
  libv8-3.8.9.20{a} linux-libc-dev{a} manpages-dev{a} nodejs
0 paquets mis à jour, 25 nouvellement installés, 0 à enlever et 0 non mis à jour.
Il est nécessaire de télécharger 41,4 Mo d'archives. Après dépaquetage, 108 Mo seront utilisés.
Voulez-vous continuer ? [Y/n/?] ■
```

OpenStack : installation/test via une VM



A screenshot of a terminal window titled "root@nclhost-10-11-180-20: ~/devstack". The window contains a command-line session for setting up the OpenStack devstack. The user runs several "echo" commands to write environment variables to a file named "localrc". The variables include ADMIN_PASSWORD, MYSQL_PASSWORD, RABBIT_PASSWORD, SERVICE_PASSWORD, and SERVICE_TOKEN, each followed by a placeholder password value. Finally, the user runs ". /stack.sh" to start the stack.

```
root@nclhost-10-11-180-20:~/devstack
Fichier Édition Affichage Rechercher Terminal Aide
root@nclhost-10-11-180-20:~# git clone https://github.com/openstack-dev/devstack.git
Cloning into 'devstack'...
remote: Counting objects: 6658, done.
remote: Compressing objects: 100% (2280/2280), done.
remote: Total 6658 (delta 4523), reused 6365 (delta 4300)
Receiving objects: 100% (6658/6658), 1.15 MiB | 107 KiB/s, done.
Resolving deltas: 100% (4523/4523), done.
root@nclhost-10-11-180-20:~# cd devstack/
root@nclhost-10-11-180-20:~/devstack# echo ADMIN_PASSWORD=... > localrc
root@nclhost-10-11-180-20:~/devstack# echo MYSQL_PASSWORD=... >> localrc
root@nclhost-10-11-180-20:~/devstack# echo RABBIT_PASSWORD=... >> localrc
root@nclhost-10-11-180-20:~/devstack# echo SERVICE_PASSWORD=... >> localrc
root@nclhost-10-11-180-20:~/devstack# echo SERVICE_TOKEN=... >> localrc
root@nclhost-10-11-180-20:~/devstack# echo FLAT_INTERFACE=br100 >> localrc
root@nclhost-10-11-180-20:~/devstack# ./stack.sh
```

OpenStack dans une VM

(plusieurs minutes + tard ...)

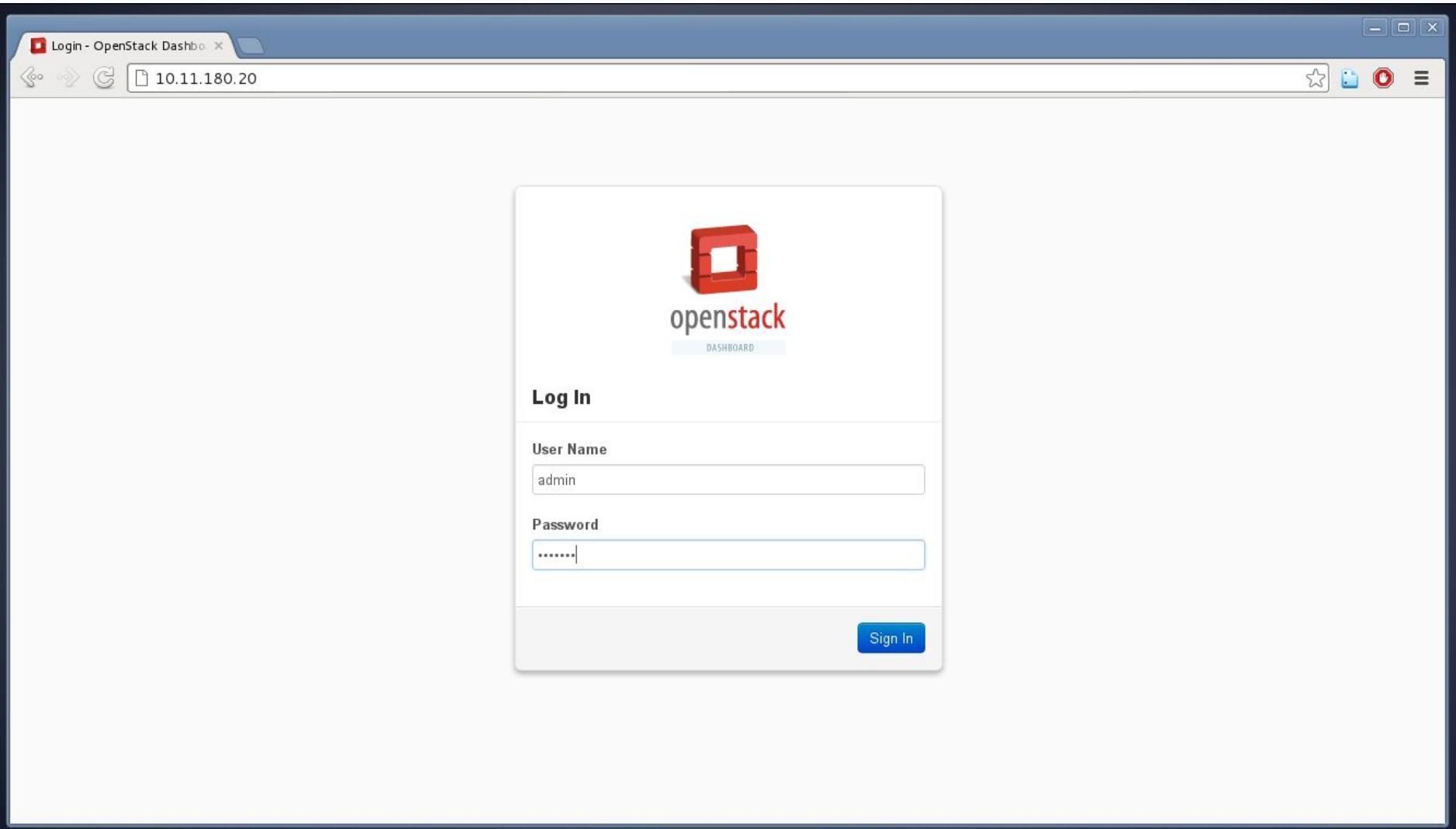
```
stack@nclhost-10-11-180-20: ~/devstack

Fichier Édition Affichage Rechercher Terminal Aide
++ echo '| id           | d68e30b2-5b36-4b7d-8135-3d1a958efb59 |'
++ read data
+ RAMDISK_ID=d68e30b2-5b36-4b7d-8135-3d1a958efb59
+ glance --os-auth-token b4d97d0d5e1c4878b63ed1760981a028 --os-image-url http://10.11.180.20:9292 image-create --name cirros-0.3.0-x86_64-uec --public --container-format ami --disk-format ami --property kernel_id=6c71bde8-07bb-4113-b990-90795e003e59 --property ramdisk_id=d68e30b2-5b36-4b7d-8135-3d1a958efb59
+-----+
| Property      | Value
+-----+
| Property 'kernel_id' | 6c71bde8-07bb-4113-b990-90795e003e59
| Property 'ramdisk_id' | d68e30b2-5b36-4b7d-8135-3d1a958efb59
| checksum       | 2f81976cae15c16ef0010c51e3a6c163
| container_format | ami
| created_at     | 2012-10-23T00:46:52
| deleted        | False
| deleted_at     | None
| disk_format    | ami
| id             | 0003ce48-faf2-4a4c-8d9a-779c6c0be63a
| is_public       | True
| min_disk       | 0
| min_ram        | 0
| name           | cirros-0.3.0-x86_64-uec
| owner          | e17970548e3f4d4ba35clea26f6427bc
| protected      | False
| size           | 25165824
| status          | active
| updated_at     | 2012-10-23T00:46:54
+-----+
+ [[ -x /opt/stack/devstack/local.sh ]]
+ set +o xtrace

Horizon is now available at http://10.11.180.20/
Keystone is serving at http://10.11.180.20:5000/v2.0/
Examples on using novaclient command line is in exercise.sh
The default users are: admin and demo
The password: 
This is your host ip: 10.11.180.20
stack.sh completed in 3722 seconds.
stack@nclhost-10-11-180-20:~/devstack$ █
```

OpenStack (dans une VM)

login



OpenStack (dans une VM)

launch instance

The screenshot shows the OpenStack Dashboard interface. On the left, there's a sidebar with 'Project' and 'Admin' tabs, and sections for 'CURRENT PROJECT admin', 'Manage Compute', 'Overview', 'Instances', 'Volumes', 'Images & Snapshots', and 'Access & Security'. The main area is titled 'Instances' and shows a single item: 'Displaying 1 item'. A central modal window is open, titled 'Launch Instance'. It has tabs for 'Details', 'Access & Security', 'Volume Options', and 'Post-Creation'. Under 'Instance Source', it says 'Image' and 'cirros-0.3.0-x86_64-uec'. The 'Instance Name' field contains 'test_cnam'. The 'Flavor' dropdown shows 'm1.tiny'. The 'Instance Count' field is set to '1'. To the right of the form, there's a section titled 'Flavor Details' listing resources for the m1.tiny flavor. Below that is a 'Project Quotas' section with three items: 'Number of Instances (0)' (10 Available), 'Number of VCPUs (0)' (20 Available), and 'Total RAM (0 MB)' (51,200 MB Available). At the bottom of the modal are 'Cancel' and 'Launch' buttons.

Instances - OpenStack Dashboard

10.11.180.20/project/instances/

Logged in as: admin

Instances

openstack

Dashboard

Project Admin

CURRENT PROJECT admin

Manage Compute

Overview

Instances

Volumes

Images & Snapshots

Access & Security

Instances

Displaying 1 item

Launch Instance

Launch Instance

Actions

Launch Instance

Instance Source

Image

Image

cirros-0.3.0-x86_64-uec

Instance Name

test_cnam

Flavor

m1.tiny

Instance Count

1

Flavor Details

Name	m1.tiny
VCPUs	1
Root Disk	0 GB
Ephemeral Disk	0 GB
Total Disk	0 GB
RAM	512 MB

Specify the details for launching an instance.

The chart below shows the resources used by this project in relation to the project's quotas.

Project Quotas

Number of Instances (0)	10 Available
Number of VCPUs (0)	20 Available
Total RAM (0 MB)	51,200 MB Available

Cancel Launch

OpenStack (dans une VM)

instances

The screenshot shows the OpenStack Dashboard interface, specifically the Instances page. The URL in the browser is 10.11.180.20/project/instances/. The dashboard has a sidebar on the left with sections for Project (admin), CURRENT PROJECT (admin), Manage Compute (Overview, Instances, Volumes, Images & Snapshots, Access & Security), and a central content area titled 'Instances'.

The main content area displays a table of instances:

<input type="checkbox"/>	Instance Name	IP Address	Size	Keypair	Status	Task	Power State	Actions
<input type="checkbox"/>	test_small		m1.small 2GB RAM 1 VCPU 20GB Disk	-	Error	None	No State	<button>Associate Floating IP</button>
<input type="checkbox"/>	test_cnam		m1.tiny 512MB RAM 1 VCPU 0 Disk	-	Error	None	No State	<button>Associate Floating IP</button>

Below the table, it says "Displaying 2 items".

OpenStack (dans une VM)

overview

The screenshot shows the OpenStack Instance Overview dashboard. At the top, it displays the URL `10.11.180.20/project/`. The dashboard has a sidebar on the left with sections for Project (selected), Admin, CURRENT PROJECT (admin), Manage Compute (Overview, Instances, Volumes, Images & Snapshots, Access & Security), and a logo for openstack.

Overview

Quota Summary

- Used 2 of 10 Available Instances
- Used 2 of 20 Available vCPUs
- Used 2,560 MB of 51,200 MB Available RAM

Select a month to query its usage:

October 2012

Active Instances: - Active RAM: - This Month's VCPU-Hours: 0.00 This Month's GB-Hours: 0.00

Usage Summary

Instance Name	VCPUs	Disk	RAM	Uptime
No items to display.				

Displaying 1 item

OpenStack (dans une VM)

services

The screenshot shows the OpenStack Dashboard interface. The title bar reads "Services - OpenStack Dash". The URL in the address bar is "10.11.180.20/admin/services/". The top right corner shows "Logged in as: admin" and links for "Settings" and "Sign Out". On the left, there's a sidebar with "openstack" branding and navigation links: Project (selected), Admin, System Panel, Overview, Instances, Volumes, Services (selected), Flavors, Images, Projects, Users, and Quotas. The main content area is titled "Services" and contains a table with the following data:

Name	Service	Host	Enabled
nova	compute	10.11.180.20	Enabled
s3	s3	10.11.180.20	Enabled
glance	image	10.11.180.20	Enabled
cinder	volume	10.11.180.20	Enabled
ec2	ec2	10.11.180.20	Enabled
keystone	identity (native backend)	10.11.180.20	Enabled

At the bottom of the table, it says "Displaying 6 items".

OpenStack (dans une VM)

type d'instances

The screenshot shows the OpenStack Dashboard interface, specifically the 'Flavors' page. The URL in the browser is 10.11.180.20/admin/flavors/. The left sidebar has a 'System Panel' with links for Overview, Instances, Volumes, Services, and Flavors (which is currently selected). The main content area displays a table of existing flavors:

	Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	ID	Actions
<input type="checkbox"/>	m1.tiny	1	512MB	0	0	1	<button>Edit Flavor</button>
<input type="checkbox"/>	m1.small	1	2048MB	20	0	2	<button>Edit Flavor</button>
<input type="checkbox"/>	m1.medium	2	4096MB	40	0	3	<button>Edit Flavor</button>
<input type="checkbox"/>	m1.large	4	8192MB	80	0	4	<button>Edit Flavor</button>
<input type="checkbox"/>	m1.xlarge	8	16384MB	160	0	5	<button>Edit Flavor</button>

At the bottom of the table, it says 'Displaying 5 items'. The top right of the dashboard shows the user is logged in as 'admin' with 'Settings' and 'Sign Out' links.

The NIST definition of Cloud Computing

service model: PaaS

The capability provided to the consumer is **to deploy** onto the cloud infrastructure consumer-created or acquired **applications** created using programming languages, libraries, services, and tools supported by the provider.

The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

Quelques acteurs du PaaS

Cloud Foundry (VMware)

OpenShift (Redhat)

Heroku (Salesforce)

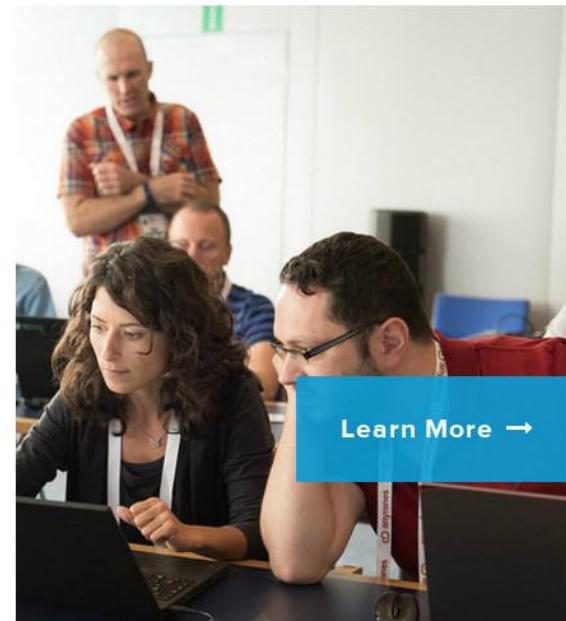
Cloud Foundry

The screenshot shows the official Cloud Foundry website at https://www.cloudfoundry.org. The header includes a navigation bar with links for 'Choose Certified Platform', 'Become a Member', and 'Blog'. Below this is a secondary navigation bar with links for 'Platform', 'Get Started', 'Community', 'Case Studies', 'Events', 'Newsroom', 'About Us', 'About', 'Projects', 'Containers', 'Multi-Cloud', and 'Security'. The main content area features a large section titled 'Developer training and certification' with a sub-section about businesses needing skilled developers and a 'Learn More' button. There is also a photograph of people working together.

01 —

Developer training and certification

Businesses around the world need more skilled developers. Our training and certification program gives developers the skills they need to create open source cloud services and applications. Update your cloud-native skills to deliver world-class apps. Get [Cloud Foundry trained and certified](#).



EVENT

TRAINING

RESEARCH

Cloud Foundry : moteur de Predix (GE)

The screenshot shows a web browser window for the 'Cloud-based Platform' at <https://www.predix.io>. The page title is 'PREDIX Developer Network'. The navigation bar includes links for CATALOG, DOCUMENTATION, RESOURCES, COMMUNITY, SUPPORT, SIGN IN, and SIGN UP. A 'Feedback' button is located on the right side. The main content area features a heading 'How Predix Works' and a subtext: 'Predix helps you develop, deploy, and operate industrial apps at the edge and in the cloud. Securely connect machines, data, and analytics to improve operational efficiency.' Below this is a 'Get the Predix Whitepaper' button. The central visual is a diagram illustrating the Predix architecture: a central hexagonal hub containing a 3D grid of blue and white cubes, connected by a network of lines to a sun icon on the left and a line graph icon on the right.

OpenShift

The screenshot shows the official website for Red Hat OpenShift Container Platform 3.5. At the top, a banner reads "Announcing Red Hat OpenShift Container Platform 3.5". The main navigation menu includes links for "MENU", "OPENSHIFT", "FEATURES", "PRICING", "CONTAINER PLATFORM", "MORE", "MY ACCOUNT", and a prominent red "SIGN UP FOR FREE" button. The central visual features the Red Hat logo and the text "RED HAT OPENSHIFT Online". Below this, a large call-to-action button says "Develop, Host, and Scale Apps in the Cloud". A descriptive text block explains that the platform automates provisioning, management, and scaling of applications. The background has a dark, abstract design with green and grey geometric shapes.

 OpenShift Online (Next Gen) Developer Preview

New! OpenShift Online has been [completely rewritten](#), enabling you to rapidly build and deploy Docker images and manage them on a robust, scalable platform. [Sign up for free](#) today.



Self-Service, On-Demand Application Stacks

Develop your application with the language and tools you want.

OpenShift : mise en avant des conteneurs

The screenshot shows the official website for Red Hat OpenShift Container Platform 3.5. At the top, a banner reads "Announcing Red Hat OpenShift Container Platform 3.5". The main header features the "OPENSHIFT" logo with a red circular icon. Below the header, a large background image of a train station platform with green glowing lines and text like "Orange Line To Convention Center" is overlaid with the "RED HAT OPENSHIFT Container Platform" logo. The central text "RED HAT OPENSHIFT CONTAINER PLATFORM" is displayed in large white letters. A subtext below it states: "The industry's most secure and comprehensive enterprise-grade container platform based on industry standards, Docker and Kubernetes." A prominent red "TRY IT FOR FREE" button is located in the lower-left area of the main image. The footer contains several navigation links with icons: "OVERVIEW" (cloud), "FEATURES" (cog), "CUSTOMERS" (lightning bolt), "CONTACT" (two people), "RESOURCES" (building), and another "TRY IT FOR FREE" link (code brackets). The URL in the browser bar is <https://www.openshift.com/container-platform/>.

ANNOUNCING

Heroku (le leader)

The screenshot shows the Heroku website homepage. At the top, there's a navigation bar with links for Products, Elements, Pricing, Documentation, Support, and More. A search bar and login/signup buttons are also present. The main visual is a large, stylized illustration of a smartphone and laptop displaying code, set against a background of clouds and a circuit board. Below this, there's a section titled "ENTERPRISE" with the sub-headline "Turn your company into an apps company". It includes a brief description of how Heroku helps companies build, manage, and deploy apps at scale. A "SIGN UP FOR FREE" button and a link to "Explore Heroku Enterprise" are included. Further down, there's a row of developer tool icons (JS, Node.js, Python, etc.) and a large purple banner with the text "Get straight to building apps" and a subtext about avoiding infrastructure complexity. At the bottom, two buttons are visible: "Build apps" and "...not infrastructure".

Cloud Application Plat x

Heroku, Inc. [US] | <https://www.heroku.com>

HEROKU Products Elements Pricing Documentation Support More

Log in or Sign up

ENTERPRISE

Turn your company into an apps company

Today every company needs apps to engage their customers and run their businesses. Step up your ability to build, manage, and deploy great apps at scale with Heroku.

SIGN UP FOR FREE

Explore Heroku Enterprise

JS Node.js Python Ruby Java .NET

Get straight to building apps

Setting up, operating and maintaining your own platform is not where the race is won. Avoid the risk and complexity, and dedicate your energy to what really matters: building great apps.

Build apps ...not infrastructure

Heroku packs

Sécurisé | https://elements.heroku.com/buildpacks

HEROKU Products Elements Pricing Documentation Support More Search Elements Log in or Sign up

Heroku Buildpacks

Buildpacks automate the build processes for your preferred languages and frameworks.

Add-ons Buttons Buildpacks

Officially Supported Buildpacks ([What is Officially Supported?](#))

 Node.js Buildpack	 Python Buildpack	 PHP Buildpack	 Ruby Buildpack	 Java Buildpack
 Go Buildpack	 Gradle Buildpack	 Scala Buildpack	 Clojure Buildpack	

The NIST definition of Cloud Computing

service model: SaaS

The capability provided to the consumer is to **use the provider's applications running on a cloud infrastructure**.

The applications are **accessible from various client devices** through either a thin client interface, **such as a web browser** (e.g., web-based email), or a program interface.

The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

Exemples de SaaS ?

(tout le monde en connaît)

Le pionnier : Salesforce

The screenshot shows the official website of Salesforce. At the top, there's a navigation bar with links for 'PRODUITS', 'SOLUTIONS', 'CLIENTS', 'SERVICES', 'COMMUNAUTÉ', 'ÉVÉNEMENTS', 'À PROPOS DE', and a prominent green 'ESSAI GRATUIT' button. Below the navigation, there are two columns of icons and text: 'NOS SOLUTIONS' (PME et start-up, par secteur d'activité) and 'NOS PRODUITS' (Ventes, Service client, Marketing, Communautés, Analytique, Développement, Internet des objets). To the right, a large banner features a hand interacting with a tablet displaying various Salesforce dashboards and charts. The banner text reads: 'Accélérez vos ventes avec le n° 1 du CRM.' and 'PLUS D'OPPORTUNITÉS. PLUS DE CROISSANCE.' It also includes buttons for 'TOUT SALESFORCE EN VIDÉO' and 'FORMULES D'ABONNEMENT'. At the bottom, a dark footer bar contains the text 'Voici Salesforce Einstein, l'intelligence artificielle intégrée dans tous les produits Salesforce' and links for 'EN SAVOIR PLUS', 'NOUS CONTACTER', and '[+] VOTRE AVIS'.

Salesforce en quelques chiffres

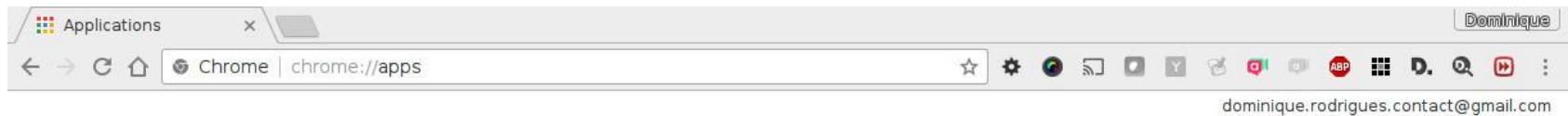
1999 : création par Mark Benioff

2004 : introduction au Nasdaq

2014 : Salesforce est désignée par Forbes entreprise la plus innovante du monde pour la 4e année consécutive

2017 : valorisation \$60 Md

Google Apps : l'alternative à Office



Web Store



Google Docs



Google Drive



YouTube



Recherche Google



Gmail hors connexion



Gmail



Google Slides



Google Sheets



Desktop, formerly D...



Secure Shell



VNC® Viewer for Go..



Awesome Screensh...



Zoom



Google Keep



Google Agenda



Office365 : la contre-alternative de Microsoft

The screenshot shows a Microsoft login page for Office 365. The URL in the address bar is <https://login.microsoftonline.com/login.srf?wa=wsignin1.0&rpsnv=4&ct=1492441147&rver=6.7.6640.0&wp=MC>. The page features a large "Office 365" logo at the top right. Below it, there are fields for "Work or school account" (containing "someone@example.com") and "Password". A "Sign in" button is prominent. To the left of the form, there is a large image of a highway at sunset with several cars driving. Overlaid on this image is a grid of smaller images showing people using various devices (laptops, phones) and connecting with each other. The grid includes labels in multiple languages: "Lączyć" (Polish), "連接" (Chinese), "Connect" (English), "تواصل" (Arabic), "Verbinden" (German), "つなぐ" (Japanese), "Yhdistää" (Finnish), and "לتحתcbc" (Hebrew). The Microsoft logo is visible in the top left corner of the browser window.

Sign in to your account

Microsoft Corporation [US] | https://login.microsoftonline.com/login.srf?wa=wsignin1.0&rpsnv=4&ct=1492441147&rver=6.7.6640.0&wp=MC

Office 365

Work or school account

someone@example.com

Password

Keep me signed in

Sign in

Can't access your account?

© 2017 Microsoft
Terms of use Privacy & Cookies

Microsoft

Outlook.com : l'autre contre-alternative de Microsoft

The screenshot shows the Microsoft Outlook web interface (owa) in a browser window. The top navigation bar includes links for 'Courrier', 'Calendrier', 'Contacts', 'OneDrive', 'Tâches', 'Word', 'Excel', 'PowerPoint', 'OneNote', 'Sway', 'Skype', 'Docs.com', 'Office', 'Bing', 'MSN', and 'Flow'. Below the ribbon, there's a message list with items from Microsoft. A modal dialog box is open in the center, prompting the user to 'Sélectionnez un élément à lire' (Select an item to read). It also contains the text 'Cliquez ici pour que le premier élément de la liste soit toujours sélectionné' (Click here so that the first item in the list is always selected). The right side of the screen features a blurred sidebar with additional links.

Messagerie - domrod

https://outlook.live.com/owa/

Courier Outlook

Annuller

Sélectionnez un élément à lire

Cliquez ici pour que le premier élément de la liste soit toujours sélectionné

Microsoft

Mises à jour de nos conditions d'utilisation et 28/07/2016

Votre Contrat de services et la Déclaration de confide...

Microsoft

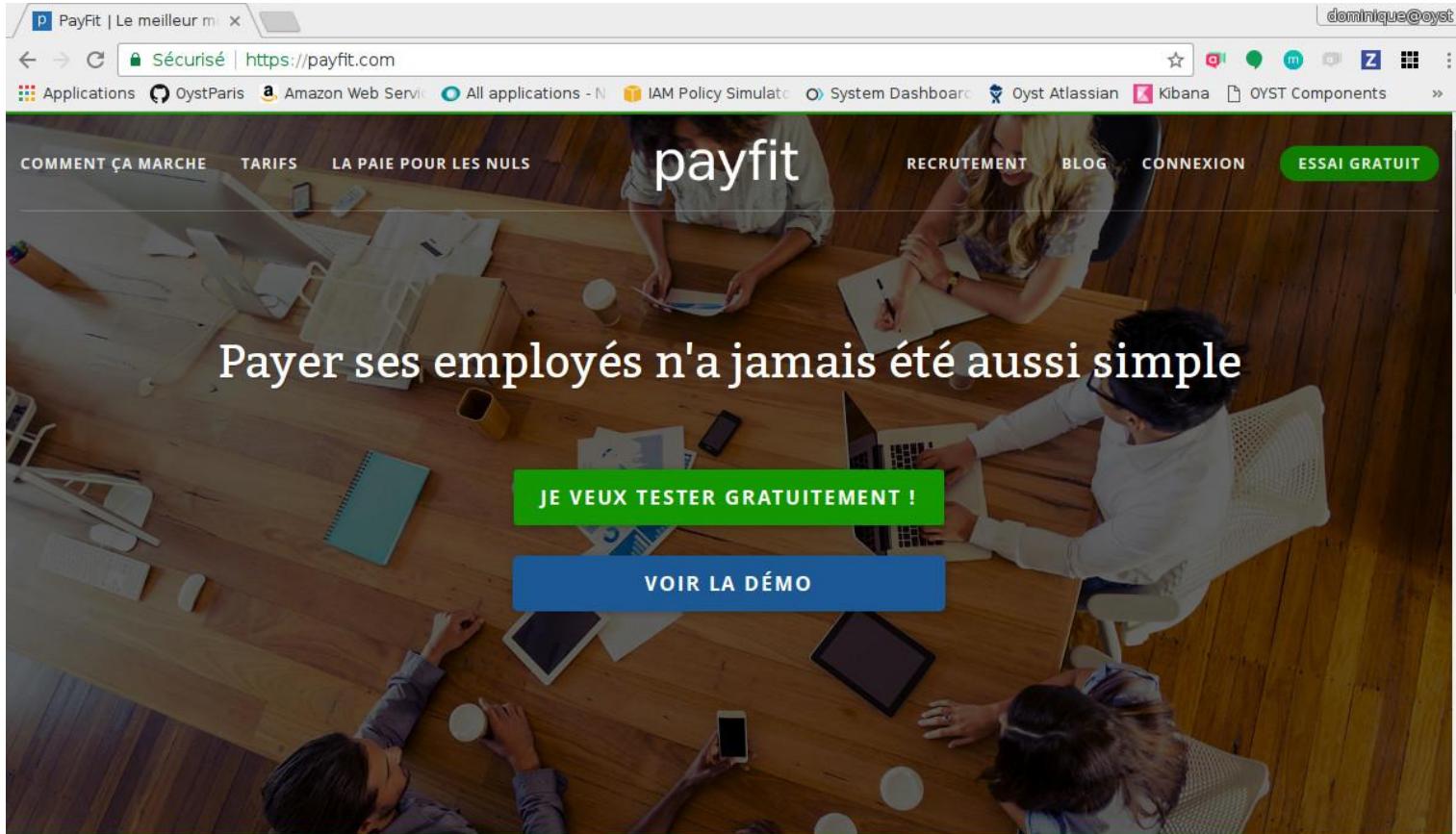
Windows Server 2016 Technical Preview 5: dé 23/07/2016

TechNet Evaluation Center Ressources pour votre év...

Microsoft

Mail Calendar Contacts OneDrive Tasks Word Excel PowerPoint OneNote Sway Skype Docs.com Office Bing MSN Flow

Bureautique, comptabilité, CRM, ... tout devient SaaS



The screenshot shows the PayFit homepage. At the top, there's a navigation bar with links for 'COMMENT ÇA MARCHE', 'TARIFS', 'LA PAIE POUR LES NULS', 'RECRUTEMENT', 'BLOG', 'CONNEXION', and 'ESSAI GRATUIT'. Below the navigation is a large banner featuring several people working at desks in an office. The text on the banner reads 'Payer ses employés n'a jamais été aussi simple' (Pay your employees has never been so simple). There are two prominent buttons: a green one labeled 'JE VEUX TESTER GRATUITEMENT !' and a blue one labeled 'VOIR LA DÉMO'.

483 entreprises nous font confiance



Évolution de l'édition de logiciels

Le SaaS est une lame de fond

Tous les éditeurs “on-premise” ont réalisé ou prévoient une version SaaS de leurs produits

Des outils pour le développement

Github (gestion de version de code)

Jira (tickets de développement)

Travis, CircleCI, Concourse (tests)

Github : le standard pour Git

(gratuit pour les projets open source)

The screenshot shows the GitHub homepage with a dark background. At the top, there's a navigation bar with links for Features, Business, Explore, and Pricing. A search bar and a 'Sign in or Sign up' button are also at the top. The main feature is a large white box containing the text 'Built for developers'. Below this, a paragraph describes GitHub as a development platform for both open source and business projects. To the right of the description is a sign-up form with three input fields: 'Pick a username', 'Your email address', and 'Create a password'. A note below the password field says 'Use at least one letter, one numeral, and seven characters.' An orange 'Sign up for GitHub' button is at the bottom of the form. A small note below it states: 'By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy policy](#). We'll occasionally send you account related emails.'



SATELLITE

Check out GitHub Satellite, in orbit around London on May 22-23.

[Learn more](#)

Github : le collaboratif avant tout

The screenshot shows a GitHub repository page for 'domrod/dockerapp'. The repository was forked from 'jeetutorial/dockerapp'. The page displays 11 commits, 10 branches, 11 releases, and 0 contributors. A pull request is open, and the latest commit was made 10 months ago. A button to add a README is visible at the bottom.

domrod/dockerapp

GitHub, Inc. [US] | https://github.com/domrod/dockerapp

This repository Search Pull requests Issues Gist

Unwatch 1 Star 0 Fork 585

Code Pull requests 0 Projects 0 Wiki Pulse Graphs Settings

No description, website, or topics provided. Edit

Add topics

11 commits 10 branches 11 releases 0 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

This branch is 1 commit behind jeetutorial:master.

Pull request Compare

James Lee update docker compose file for docker swarm Latest commit 8bddaa6 on 27 Jun 2016

app add unit test 10 months ago

Dockerfile update deployment branch and remove volumn 10 months ago

circle.yml update deployment branch and remove volumn 10 months ago

common.yml refactor docker compose file 10 months ago

docker-compose.yml refactor docker compose file 10 months ago

prod.yml update docker compose file for docker swarm 10 months ago

Help people interested in this repository understand your project by adding a README. Add a README

Concourse : les tests en continu

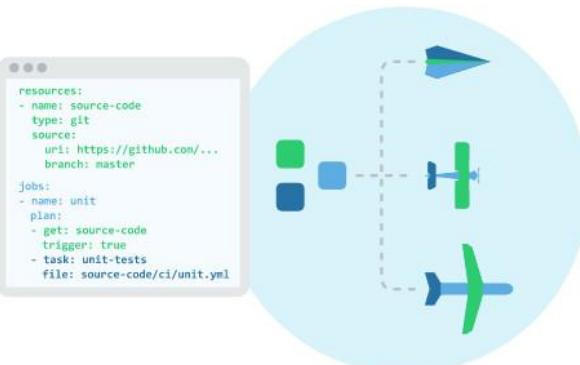
The screenshot shows the Concourse website at <https://concourse.ci>. The page features a large teal header with the text "CI that scales with your project." Below the header is a diagram illustrating a CI pipeline. The pipeline consists of several components: three "worker" boxes, two "controller" boxes, an "integration" box, a "deploy" box, and a "final-release" box. The "controller" boxes are connected to the "worker" boxes and the "integration" box. The "integration" box is connected to the "deploy" box, which in turn leads to the "final-release" box. The "deploy" box also has a "release" connection back to the "controller" boxes.

Simple and Scalable

Rather than a myriad of checkboxes, pipelines are defined as a single declarative config file, composing together just [three core concepts](#).

As your project grows, your pipeline will grow with it, and remain understandable.

```
resources:
- name: source-code
  type: git
  source:
    url: https://github.com/...
    branch: master
jobs:
- name: unit
  plan:
    - get: source-code
      trigger: true
    - task: unit-tests
      file: source-code/ci/unit.yml
```



Le Cloud : avènement des API

SDK (AWS, Azure, GCE)

API REST (Consul, Restlet)

REST

Representational State Transfer

Utilisation de méthodes (verbes) tels que

GET / PUT / POST / DELETE

via HTTP/HTTPS

http://www.ics.uci.edu/~fielding/pubs/dissertation/rest_arch_style.htm

Restlet : un fournisseur d'API REST

The screenshot shows the Restlet Cloud interface. At the top, there's a navigation bar with links for Modules, Use cases, Pricing, Documentation, and Open Source. Below that is a main heading "Cloud" with the subtext "Create & Host your Data APIs". A prominent "Launch Cloud" button is centered. The main content area has tabs for CLOUD (selected), DASHBOARD, and ANALYTICS. On the left, a sidebar shows "My Company API" (Web API - Full Stack) with sections for Overview, Settings, Downloads, Messages, Revisions, Members, and Analytics. The Overview tab is active. It displays endpoints like "/companies/" (GET: Loads a list of Company, POST: Adds a Company) and "/companies/{companyid}" (GET: Loads a Company, PUT: Stores a Company). On the right, a detailed configuration panel for the "/companies/{companyid}" endpoint is shown, with fields for Relative path (/companies/{companyid}), Name (Company), Description (empty), and Section (My Company API_Data). A "Try it out" button with a swagger icon is present, along with a note about opening a testing UI in a new tab.

Restlet

Sécurisé | https://restlet.com/modules/cloud/

Cloud

Create & Host your Data APIs

Launch Cloud

CLOUD DASHBOARD ANALYTICS

Pricing Help ▾ Sign in

My Company API - Web API - Full Stack

Version 1 Draft Deploy ?

General information

Endpoints

Resources

/companies/

GET Loads a list of Company

POST Adds a Company

/companies/{companyid}

GET Loads a Company

PUT Stores a Company

Relative path /companies/{companyid}

Name Company

Description

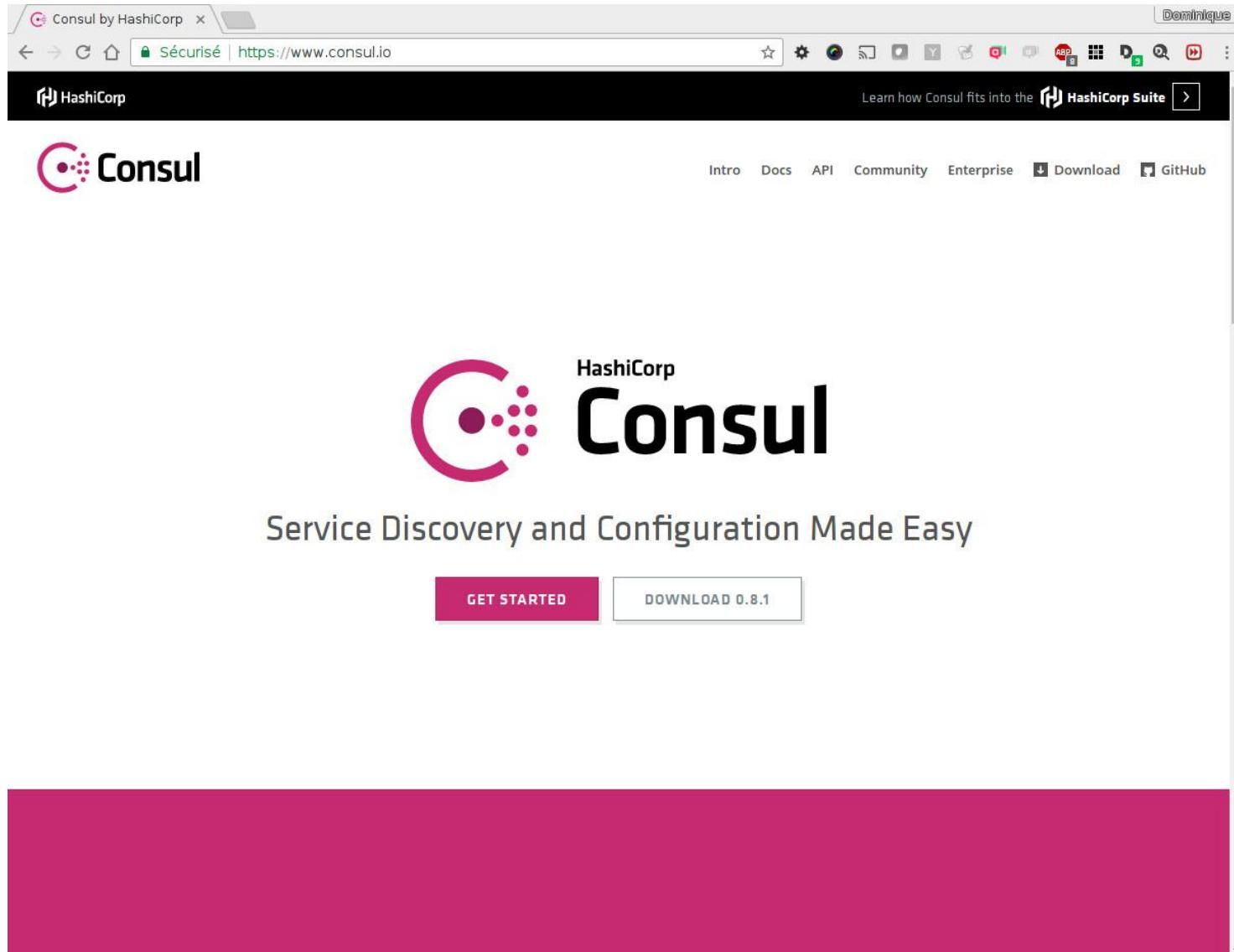
Section My Company API_Data

Try it out swagger

Opens a new tab with a dedicated testing UI for your API. If your API's authentication is managed via Restlet Cloud, your credentials will be filled in automatically.

Consul

découverte de services et stockage K/V



Le Cloud : ère des orchestrateurs multi-cloud

Swarm (Docker inc.)

Mesos

Terraform

Kubernetes

Terraform

The screenshot shows a web browser displaying the official Terraform website at <https://www.terraform.io>. The page features the Terraform logo (a blue stylized 'T') and the word 'Terraform' in large black letters. Below the logo, the tagline 'Write, Plan, and Create Infrastructure as Code' is displayed. Two prominent buttons are visible: 'GET STARTED' in a purple box and 'DOWNLOAD 0.9.3' in a white box. At the top of the page, there is a navigation bar with links to 'Intro', 'Docs', 'Community', 'Enterprise', 'Download', and 'GitHub'. A banner at the top right mentions the 'HashiCorp Suite'. The browser interface includes a title bar with the URL, a toolbar with various icons, and a status bar at the bottom.

Terraform by HashiCorp

Sécurisé | <https://www.terraform.io>

HashiCorp

Learn how Terraform fits into the [HashiCorp Suite](#)

Terraform

Intro Docs Community Enterprise Download GitHub

HashiCorp

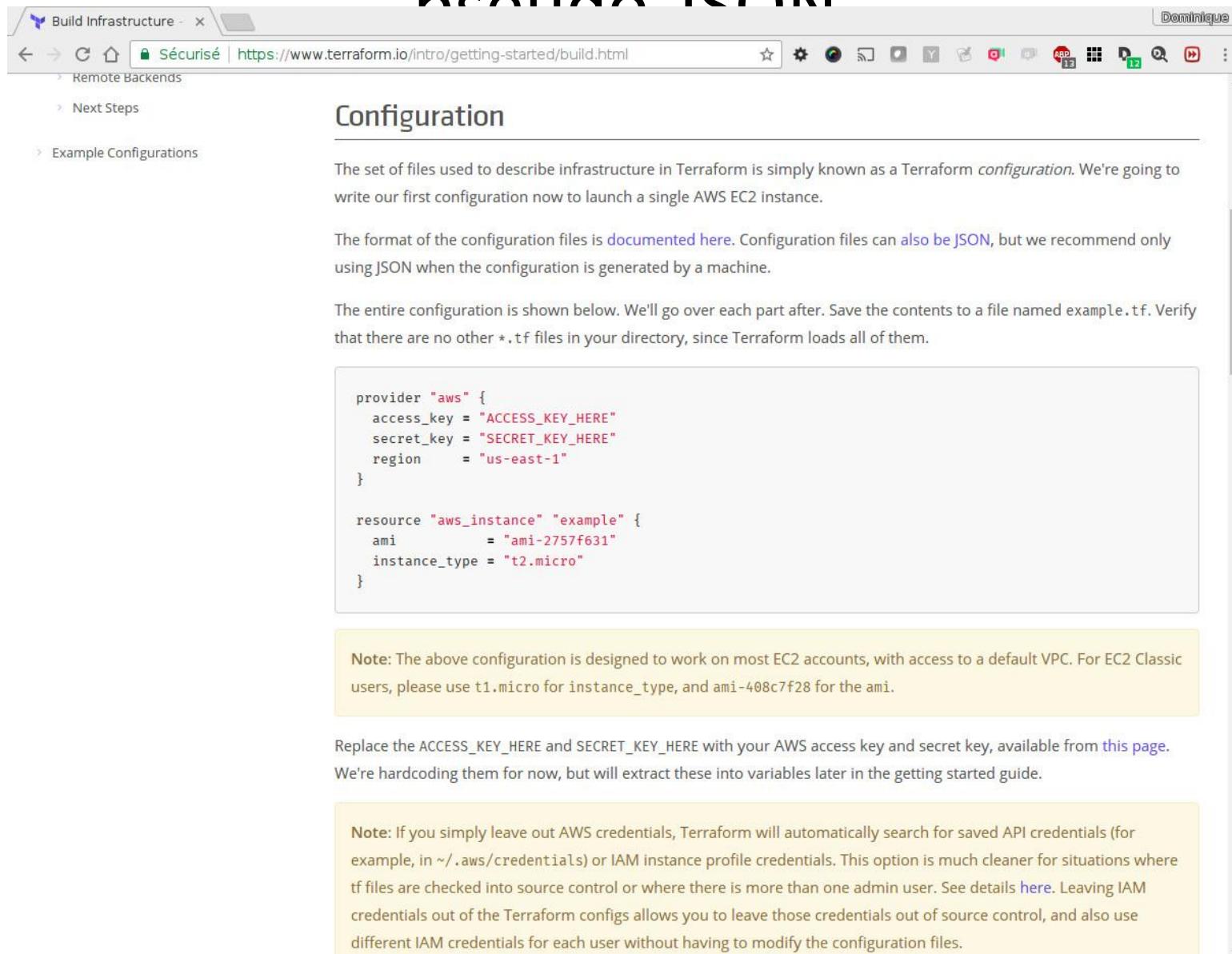
Terraform

Write, Plan, and Create Infrastructure as Code

GET STARTED DOWNLOAD 0.9.3

SIMPLE AND POWERFUL

Terraform : infrastructure en pseudo JSON



The screenshot shows a web browser window with the URL <https://www.terraform.io/intro/getting-started/build.html>. The page title is "Configuration". The content discusses Terraform configuration files and provides a sample configuration for launching an AWS EC2 instance.

The set of files used to describe infrastructure in Terraform is simply known as a Terraform *configuration*. We're going to write our first configuration now to launch a single AWS EC2 instance.

The format of the configuration files is [documented here](#). Configuration files can [also be JSON](#), but we recommend only using JSON when the configuration is generated by a machine.

The entire configuration is shown below. We'll go over each part after. Save the contents to a file named `example.tf`. Verify that there are no other `*.tf` files in your directory, since Terraform loads all of them.

```
provider "aws" {  
    access_key = "ACCESS_KEY_HERE"  
    secret_key = "SECRET_KEY_HERE"  
    region     = "us-east-1"  
}  
  
resource "aws_instance" "example" {  
    ami          = "ami-2757f631"  
    instance_type = "t2.micro"  
}
```

Note: The above configuration is designed to work on most EC2 accounts, with access to a default VPC. For EC2 Classic users, please use `t1.micro` for `instance_type`, and `ami-408c7f28` for the `ami`.

Replace the `ACCESS_KEY_HERE` and `SECRET_KEY_HERE` with your AWS access key and secret key, available from [this page](#). We're hardcoding them for now, but will extract these into variables later in the getting started guide.

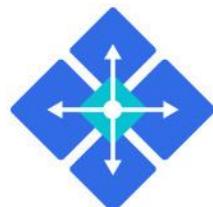
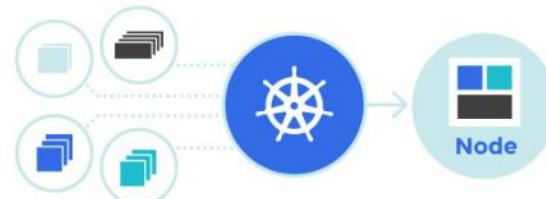
Note: If you simply leave out AWS credentials, Terraform will automatically search for saved API credentials (for example, in `~/.aws/credentials`) or IAM instance profile credentials. This option is much cleaner for situations where `tf` files are checked into source control or where there is more than one admin user. See details [here](#). Leaving IAM credentials out of the Terraform configs allows you to leave those credentials out of source control, and also use different IAM credentials for each user without having to modify the configuration files.

Kubernetes (k8s) par Google

The screenshot shows the official Kubernetes website at https://kubernetes.io. The page has a dark background with a network-like graphic. At the top, there's a navigation bar with links to Documentation, Blog, Partners, Community, and Case Studies. Below the navigation, the word "kubernetes" is written in lowercase with a blue hexagon icon. The main title "Production-Grade Container Orchestration" is displayed prominently. A subtitle "Automated container deployment, scaling, and management" follows. A blue button labeled "Try Our Interactive Tutorials" is centered below the subtitle. The URL in the browser bar is https://kubernetes.io, and the tab title is "Kubernetes | Product".

Kubernetes is an open-source system for automating deployment, scaling, and management of containerized applications.

It groups containers that make up an application into logical units for easy management and discovery. Kubernetes builds upon 15 years of experience of running production workloads at Google, combined with best-of-breed ideas and practices from the community.



Planet Scale

Designed on the same principles that allows Google to run billions of containers a week, Kubernetes can scale without increasing your ops team.

DEMO

Digital Ocean

(web)

AWS

(web, SDK, Terraform)