

WINDOWS AZURE

FAST AND FLEXIBLE CLOUD FOR  
OPEN SOURCE SOLUTIONS

Cloud World Forum, London

*rob craft*

*senior director, enterprise development & OSS*  
microsoft corporation

> 50%

FORTUNE 500 COMPANIES  
USING WINDOWS AZURE

3.2

MILLION  
ORGANIZATIONS

ACTIVE DIRECTORY ACCOUNTS  
WITH 68 MILLION USERS

2x

COMPUTE + STORAGE  
EVERY 6 MONTHS

8.5  
TRILLION

STORAGE OBJECTS

900K/sec

STORAGE TRANSACTIONS PER SECOND

(2 TRILLION/MONTH)

265  
BILLION

AUTHENTIFICATIONS VIA WINDOWS AZURE  
ACTIVE DIRECTORY

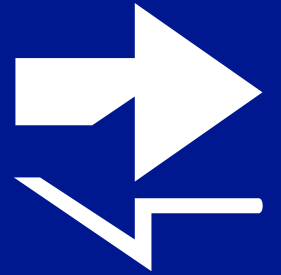
Scale

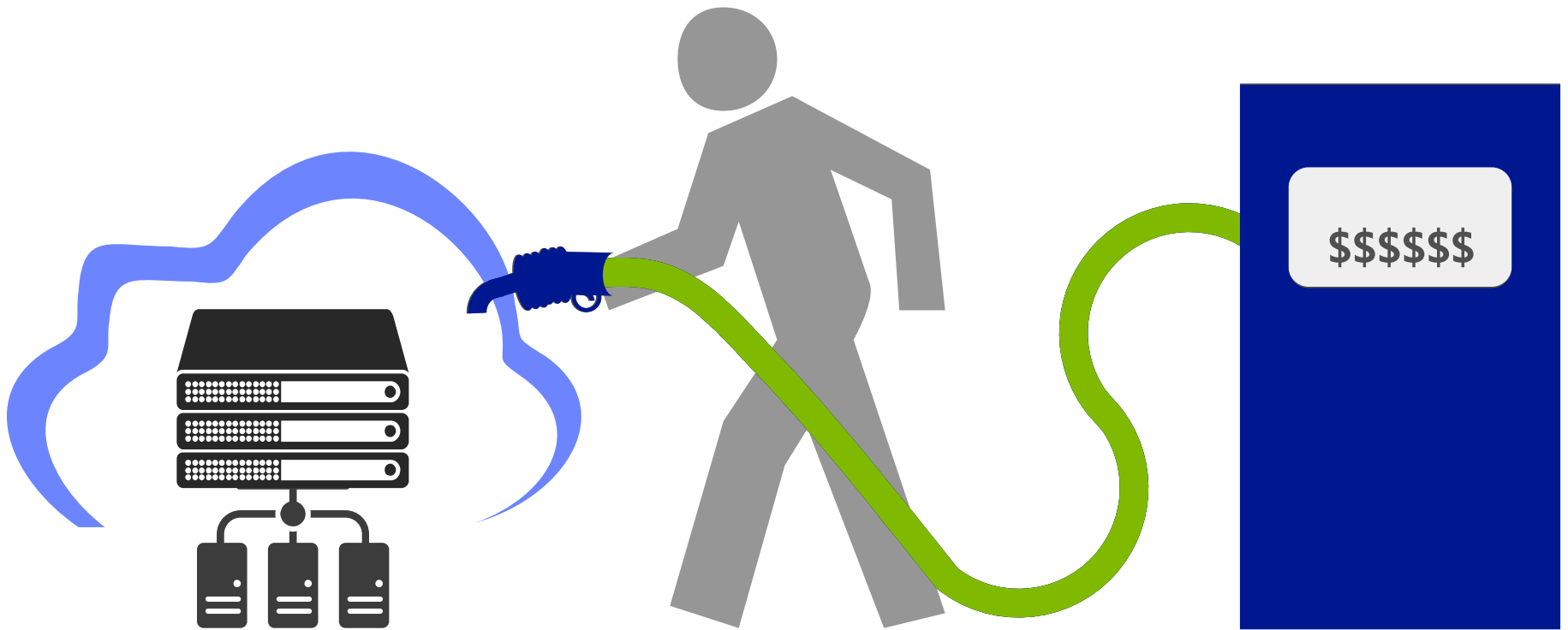


Economics



Speed





pay by the minute

# Microsoft: Unmatched in the Cloud

## Millions of users, millions of servers

> 15 years in consumer and business services

250 million people store content on SkyDrive

1 petabyte+ per month of updates via Windows Update

Windows Azure: used by customers in 41 countries

400M+ Outlook.com users

## Cloud investments

\$2.3B+ in cloud infrastructure

200+ services, delivered 24x7

Geo-distributed data centers

Rapid modular model

30,000+ engineers involved in cloud-based activities

2,000+ people in cloud infrastructure engineering and operations

## Online services operational excellence

Federated operations centers 24x7

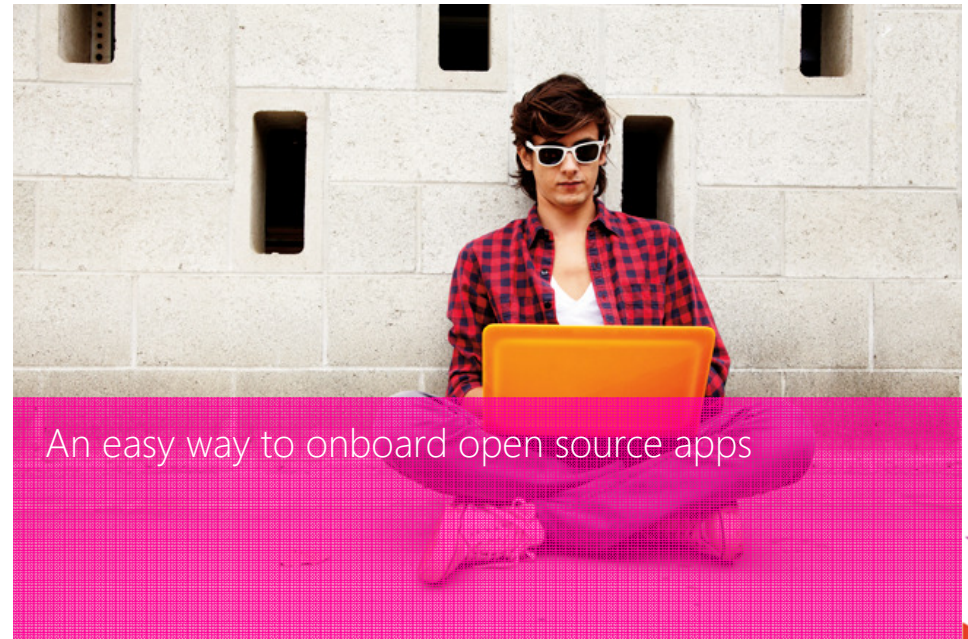
Highly secure, compliant infrastructure

FISMA certified, SAS 70/SSAE 16, and ISO 27001 compliant

Carbon footprint reduction

99.9% uptime, financially backed SLAs

# Services & Open Cloud





Global datacenters 

Global CDN 

Global support 

Local account teams 



Identity



Cloud Services



Mobile Services



Table Storage



SQL Azure



Blob Storage



Virtual Machines



Web Sites

Open  
Flexible  
Fast



Analytics



3rd Party Services



Caching



Service Bus



Media Services



CDN



Big Data



Integration



# Devices & Developers

Enabling developers to re-use skills to extend their reach.

# Open Source Up & Down the Stack

- Android, iOS & Node.js back-end via Azure Mobile Services
- Java, Ruby SDKs via Linux VM, Engine Yard & Oracle
- Websites for PHP, Node.js, Python & App Gallery
- MySQL via ClearDB, MongoDB via MongoLab, Hadoop
- From Linux VMs via Image Gallery & VM Depot

Devices



Languages



Apps



Data



Operating Systems



ORACLE®

# Windows Azure Virtual Machines

Infrastructure as a Service introduces new functionality that allows full control and management of both Windows and Linux virtual machines along with an extensive virtual networking offering.



## Flexible

Easily migrate existing applications as-is to the cloud

Assist New Cloud App Development by Integrating IaaS and PaaS Functionality

Set up new virtual machines in Windows Azure with only a few clicks.

Agentless Deployment for Windows Servers



## Open

Start from a pre-built image from our image library

Upload your own VHD from on-premises.

Create Your Own Customized Images

Support for community and commercial versions of Linux

Move images back on premise as necessary



## Solid

Run enterprise applications such as SQL Server, SharePoint or Active Directory in the cloud

Easily create hybrid cloud and on-premises solutions with VPN connectivity between the Windows Azure Data Center and your own network.

# Linux VMs

- Image Gallery: choices of Oracle Linux, SUSE, Ubuntu, CentOS distros on Azure
- VMDepot: extending choices with complete stacks
- Portal, Xplat-CLI & REST API for deployment & management
- Scripting & Automation w/ Xplat-CLI (Linux, OSX) & PowerShell (Windows)

The image shows two overlapping screenshots. The top one is the 'CREATE A VIRTUAL MACHINE' wizard in Azure, with the 'Select the virtual machine operating system' step. The 'SUSE Linux Enterprise Server 11 Server' image is highlighted. The bottom screenshot is the VM Depot website, showing a search for 'PHP' and a result for 'X2CRM 3.1.2-0 (Ubuntu 12.10)'.

**CREATE A VIRTUAL MACHINE**  
Select the virtual machine operating system

ALL  
PLATFORM IMAGES  
MY IMAGES  
MY DISKS

- BizTalk Server 2013 Enterprise
- BizTalk Server 2013 Evaluation
- BizTalk Server 2013 Standard
- Visual Studio Ultimate 2013 Preview
- openSUSE 12.3
- SUSE Linux Enterprise Server 11 Ser...**
- Ubuntu Server 12.04 LTS
- Ubuntu Server 12.10

**SUSE Linux Enterprise Server 11 Server**  
SUSE Linux Enterprise Server is a highly reliable, scalable, and secure server operating system, built to power mission-critical workloads in both physical and virtual environments. It is an affordable, interoperable, and manageable open source foundation. With it, enterprises can cost-effectively deliver core business services, enable secure networks, and simplify the management of their heterogeneous IT infrastructure, maximizing efficiency and value. Customization of these images can be done at <http://susestudio.com>

**VM DEPOT** by Microsoft Open Technologies  
PREVIEW  
Subscribe  
Nik Garkusha Sign Out

Back  
Browse Images  
My Account

## Virtual Machine Images

VM DEPOT—FIND, DEPLOY AND SHARE IMAGES FOR WINDOWS AZURE

VM Depot is a community-driven catalog of preconfigured operating systems, applications, and development stacks that can easily be deployed on Windows Azure. Find your favorite software and deploy it in minutes, or join the community, build a virtual machine image, and share it with others. [Learn more](#).

VM Depot is brought to you by Microsoft Open Technologies, Inc., a subsidiary of Microsoft Corporation. The virtual machine images on this site are provided and licensed to you by community members. Microsoft Open Technologies does not screen these images for security, compatibility or performance, and does not provide any license rights or support for them.

PHP

Sort by: **Featured** Date Added Name Platform Rating

**X2 CRM**  
Publisher: BitNami  
Platform: ubuntu

**X2CRM 3.1.2-0 (Ubuntu 12.10)**  
★★★★★  
Deployment Script

X2CRM powered by BitNami is a pre-configured, ready to run image for running X2CRM on Windows Azure. X2CRM is a sales, marketing and service application designed for companies that require a tightly focused customer information system. An emphasis is placed on sales force speed and process optimization to reduce the

Packages: apache mysql php x2crm

- Portal / VMs
- Custom VMs
- Platform Images

The screenshot displays the Windows Azure portal interface. At the top, a 'NEW' menu includes options for 'WEB SITE', 'VIRTUAL MACHINE', 'MOBILE SERVICE', and 'CLOUD SERVICE'. A 'QUICK CREATE' button is also visible. A modal window titled 'CREATE A VIRTUAL MACHINE' is open, prompting the user to 'Select the virtual machine operating system'. This window lists various platform images, including BizTalk Server, Visual Studio, openSUSE, SUSE Linux Enterprise Server 11, and Ubuntu Server 12.04 LTS and 12.10. A detailed description of SUSE Linux Enterprise Server is shown on the right side of the modal.

Below the modal, the 'ububu13ruby' virtual machine configuration page is visible. The page title is 'ububu13ruby' and it includes navigation tabs for 'DASHBOARD', 'MONITOR', 'ENDPOINTS', and 'CONFIGURE'. A table lists the network endpoints for the VM:

NAME	PROTOCOL	PUBLIC PORT	PRIVATE PORT
SSH	TCP	49189	22

# Current Linux support in Azure

## Azure IaaS: Supported Platform Images

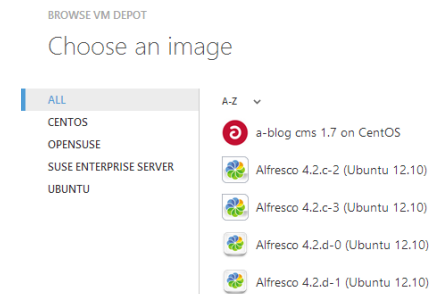


- Pre-built images optimized for cloud
- Up-to-date VMs validated by Linux vendors
- Microsoft support via forum
- Easy path for moving on-prem VMs to cloud
- Manage via familiar tools / SSH



## Azure IaaS: VM Depot community images

- Gallery of community-built images
- Supported by 3<sup>rd</sup> party vendors (e.g. BitNami)
- Integrated into Azure portal and management tools
- Options to add vendor provided support for a VM



"Our biggest benefit is scalability, that's our main reason for a migration. We were sincerely and positively surprised by cost of migration and Azure server itself" Ivan Baruzin, Ademptio (2 Linux Servers VPS to 20 Linux VMs on Azure)

"Microsoft is playing quite nicely with Linux and other open source tools."

-Robert McMillan, Wired Enterprise

"Wired"

- VM Depot
- Complete Stacks

BROWSE VM DEPOT

Choose an image

ALL | A-Z | Ruby Stack 1.9.3-9 (U...

CENTOS

OPENSUSE

SUSE ENTERPRIS

UBUNTU

Windows Azure

virtual machines

VIRTUAL MACHINE INSTANCES | IMAGES | DISKS

NAME	SUBSCRIPTION	STATUS	LOCATIO
		Pending registration	http://t

**VM DEPOT** by Microsoft Open Technologies

PREVIEW | Subscribe | Nik Garkusha Sign Out

Back | DEPLOYMENT SCRIPT | PUBLISH | VIEW | SHARE | HELP

Browse Images | My Account

### Virtual Machine Images

VM DEPOT—FIND, DEPLOY AND SHARE IMAGES FOR WINDOWS AZURE

VM Depot is a community-driven catalog of preconfigured operating systems, applications, and development stacks that can easily be deployed on Windows Azure. Find your favorite software and deploy it in minutes, or join the community, build a virtual machine image, and share it with others. [Learn more.](#)

VM Depot is brought to you by Microsoft Open Technologies, Inc., a subsidiary of Microsoft Corporation. The virtual machine images on this site are provided and licensed to you by community members. Microsoft Open Technologies does not screen these images for security, compatibility or performance, and does not provide any license rights or support for them.

PHP

Sort by: **Featured** | Date Added | Name | Platform | Rating

X2CRM 3.1.2-0 (Ubuntu 12.10) ★★★★★

X2CRM powered by BitNami is a pre-configured, ready-to-run image for running...

Publisher: BitNami | Platform: ubuntu

**Choose Deployment Region** West US

Please refer to the [Documentation](#) for information on how to deploy a VM using the command line below.

```
azure vm create DNS_PREFIX -o vmdepot-323-1-1 -l "West US" USER_NAME [PASSWORD] [--ssh] [other_options]
azure vm endpoint create-multiple DNS_PREFIX 80:80,443:443
```

- Manage & Scaling
- Portal, Xplat-Cli & REST API
- Scripting & Automation

The image is a composite of three screenshots. The top screenshot shows a monitoring dashboard with a line graph for CPU Percentage, Disk Read Bytes/Sec, Disk Write Bytes/Sec, Network In, and Network Out over a 24-hour period. A purple line for CPU percentage shows a peak of 25.16%. Other data points include 192.26 MB for Network In and 86.89 MB for Disk Write Bytes/Sec. The middle screenshot is a terminal window titled 'Command Line Tools Console' showing the command 'azure x' and some output. The bottom screenshot is a GitHub repository page for 'WindowsAzure / azure-sdk-tools-xplat', showing 1000+ commits, 6 branches, 10 releases, and 31 contributors. The commit history shows a recent commit by 'guangyang' 11 days ago with the message 'Update README.md'.

```
npm install -g azure-cli
azure account download
azure account import [file]
```

Command Line Tools Console

```
azure x
info:
info:
info:
```

WindowsAzure / **azure-sdk-tools-xplat**

Windows Azure Cross Platform Command Line

1000+ commits 6 branches 10 releases 31 contributors

branch: master azure-sdk-tools-xplat /

Update README.md ...

guangyang authored 11 days ago latest commit 54869ef4f4

bin	Fix coding conventions	2 months ago
features	First scenario is passing!	a month ago
lib	Modifying sync command to use updated SDK	14 days ago





Full support for  
Oracle software  
on Windows  
Server Hyper-V  
and Windows  
Azure

Oracle license  
mobility for  
Azure public  
cloud

Pay-as-you-go  
Azure images  
of Oracle  
Database,  
WebLogic  
Server, and JDK

Oracle Linux as  
preconfigured  
instances on  
Windows Azure

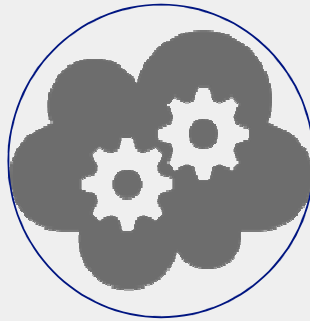
Fully licensed  
and supported  
Java on  
Windows Azure

# Java on Windows Azure



## IaaS

- Windows or Linux VMs
- Official Oracle JDK v6 & v7
- Pre-configured VMs
- Oracle WebLogic, VM Depot or your own JVM



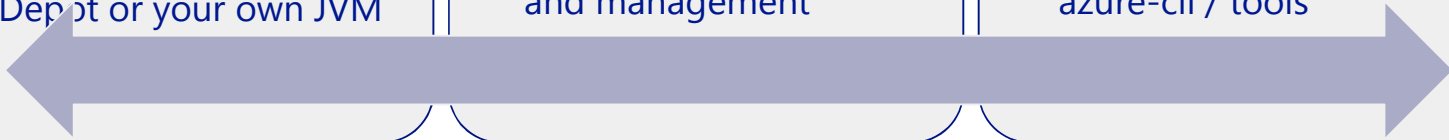
## PaaS

- 64 bit OpenJDK build by Azul (Zulu)
- Or bring any VM
- Eclipse plugin for deployment, monitoring and management



## Services

- Windows Azure SDK for Java: Blob, table, queue, service bus, SQL, etc
- Other Azure SDKs and azure-cli / tools



# Windows Azure Websites

A highly scalable Web hosting service for private and public clouds optimized for cloud hosting economics and integrated with the worlds best applications, frameworks and tools.



## Flexible

- Easy to get started with 10 free web sites
- Easy to create sites in a few clicks
- Easy to deploy existing sites
- Easy to manage and scale your sites



## Open

- Supports multiple frameworks (ASP.NET, Classic ASP, PHP, Node.js)
- Pick from popular Open Source apps
- Pick your DB (SQL Azure, MySQL)
- Choose your tools (Visual Studio, Git, FTP, WebMatrix)
- Build on any platform (Windows, Mac, Linux)



## Solid

- Nearly instant deployment
- Scale out for greater availability or scale up for improved performance using our global cloud platform
- Integrated source control with Team Foundation Server (TFS) and Git

# PaaS: Web Sites

- PHP, Node.js & Django  
Python in Azure Web Sites
- Choices of Database & add-ons (Mongo, MySQL)
- Drupal, WordPress, Joomla & other OSS frameworks in App Gallery
- Deployment Choices (Git, FTP) & Continuous delivery
- Global scale with control & integration: IDE, command line & APIs

NEW WEBSITE - CUSTOM CREATE

## Create Web Site

URL

PaaS4ModernWeb .azurewebsites.net

SUBSCRIPTION

Mobile Demo

REGION

North Central US

DATABASE

Create a new MySQL database

DB CONNECTION STRING NAME

My\_MySQL\_DB

Publish from source code

ADD WEB APP

Find Apps for Windows Azure

ALL  
APP FRAMEWORKS  
BLOGS  
CMS  
ECOMMERCE  
FORUMS  
GALLERIES  
TEMPLATES  
TOOLS  
WIKI

A-Z

Acquia Drupal 7

Drupal Commerce Kickstart

Joomla! 2.5

Kentico CMS for ASP.NET

Lemmon

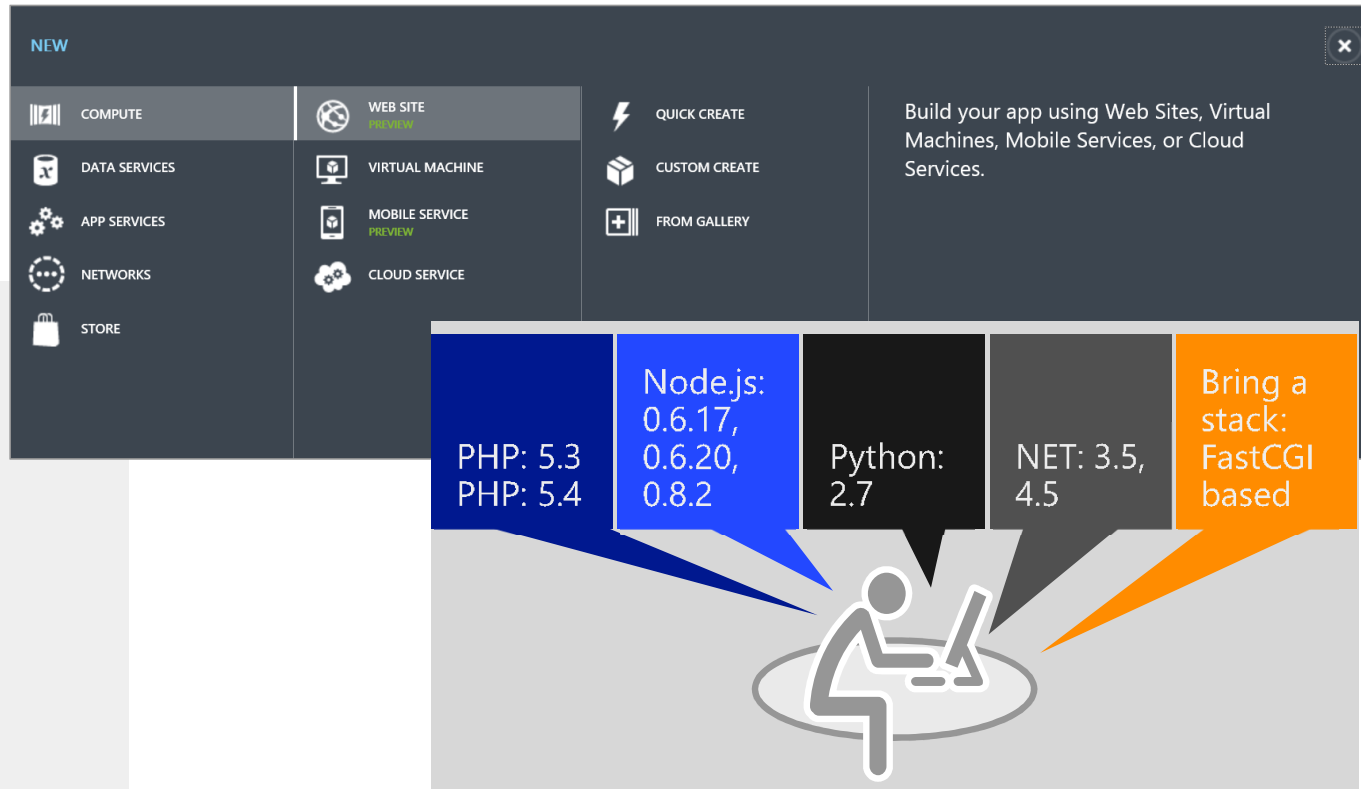
mojoPortal

Acquia Drupal 7

Acquia Drupal 7 provides the fastest on-ramp to build dynamic and social web sites featuring both editorial and user-generated content. Includes Drupal core and popular modules.

VERSION	7.18.17
SIZE (KB)	5635
RELEASE DATE	1/4/2013
PUBLISHER	Acquia.com

- Rapid & Flexible
- Choice of Languages
- Choice of Databases



- App Gallery

ADD WEB APP

### Find Apps for Windows Azure

- ALL
- APP FRAMEWORKS
- BLOGS
- CMS
- ECOMMERCE
- FORUMS
- GALLERIES
- TEMPLATES
- TOOLS
- WIKI

A-Z

- Incentive
- Joomla! 2.5
- Kentico CMS for ASP.NET



**MEDIAWIKI**

MediaWiki is a free software open source wiki package written in PHP, originally for use on Wikipedia. It is now used by several other projects of the non-profit Wikimedia Foundation and by many other wikis.

VERSION	1.20.3
SIZE (KB)	22954



- Deployment Choices
- Source Control
- Continuous delivery



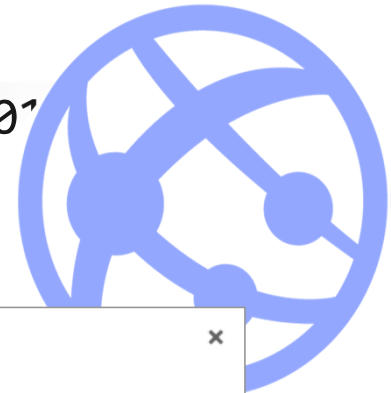
**GIT : FTP**

01010111001010101101




**GIT : FTP**


010101110010101101





SET UP DEPLOYMENT ✕



Where is your source code?

 Local Git repository



[DASHBOARD](#) [DEPLOYMENTS](#) [MONITOR](#) [CONFIGURE](#) [SCALE](#) [LINKED RESOURCES](#)

deployment history GIT URL   

	Wednesday, June 05, 2013 4:45 PM
	Rebranding
ID: b0f4ff9f7f	AUTHOR: Calvin DEPLOYED BY: TEDemo
	<span style="color: green;">✓ ACTIVE DEPLOYMENT:</span> Wednesday, June 05, 2013 4:45 PM
	Default Page
ID: 79939c9500	AUTHOR: Calvin DEPLOYED BY: \$TENADEMOBACKUPEU

Not Modified: Wednesday, June 05, 2013 6:00 PM

- Scale / Autoscale
- IDEs / Tools
- Command line / API



A screenshot of the Node.js Developer Center website. The main heading is 'NODE.JS DEVELOPER CENTER'. Below it, there's a large code snippet: 'npm install azure'. To the right, there's a promotional banner: 'Create your first Node.js app' with the subtext 'Deploy in seconds using Git with Windows, Mac, or Linux.' The background features a green hexagonal pattern.

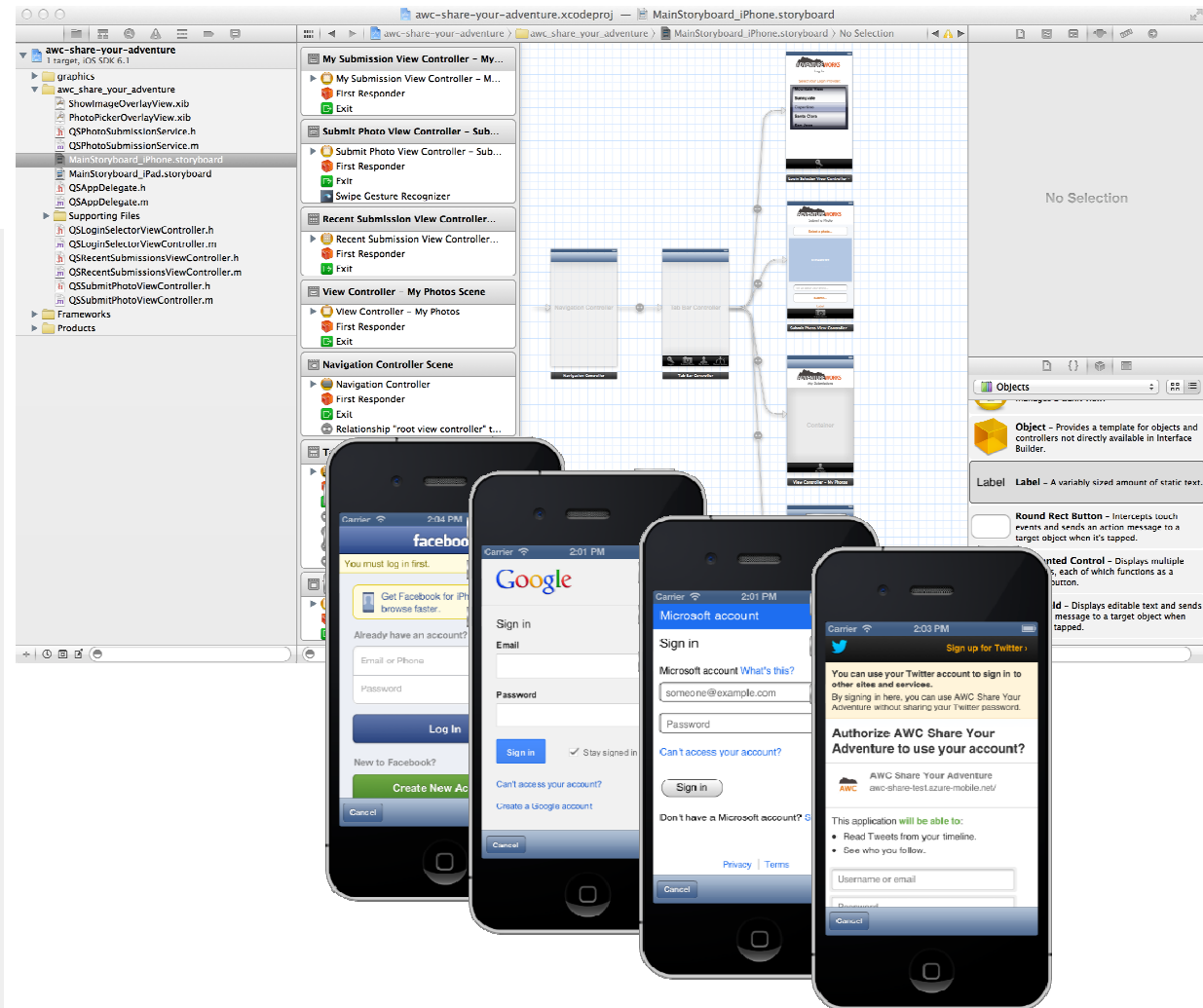
```
Glenns-MacBook-Pro:current glennblock$ azure site list --json
[
  {
    "AdminEnabled": "true",
    "AvailabilityState": "Normal",
    "ComputeMode": "Shared",
    "Enabled": "true",
    "EnabledHostNames": [
      "sbchat1.azurewebsites.net",
      "sbchat1.scm.azurewebsites.net"
    ],
    "HostNameSslStates": {
      "HostNameSslState": {
        "0": {
          "IpBasedSslResult": {},
          "Name": "sbchat1.azurewebsites.net",
          "SslState": "Disabled"
        }
      }
    }
  }
]
```

```
var scripty = require('azure-scripty');
scripty.invoke(['site create mysite --git', 'site config add foo=bar', 'site show mysite'],
function(err, results){
  console.log(results[2]) //shows the site details
});
```



# Mobile Services

- iOS, Android & HTML5 /JS Mobile SDKs
- Push Notification, OAuth & Data choices (SQL, noSQL)
- Powerful scripting, modules & custom APIs
- 3<sup>rd</sup> Party Services integration
- Git, Continuous Deployment
- IDEs (via SDKs), Command Line & API



- Multiple Platforms
- Push Notifications
- Authentication
- Data in the Cloud

The screenshot shows the Windows Azure portal interface for an application named 'awc-share-test'. The top navigation bar includes 'DASHBOARD', 'DATA', 'API', 'SCHEDULER', 'PUSH', 'IDENTITY', 'CONFIGURE', 'SCALE', and 'LOGS'. The main content area is titled 'microsoft account settings' and contains several configuration fields:

- CLIENT ID:** 0000000440f6489
- CLIENT SECRET:** zkpA6Tldq5qs-3Mf8v1LOGcA2Qw7
- facebook settings:**
  - APP ID/API KEY:** 139653202898705
  - APP SECRET:** 63f290f22de0588ace462bcc69c67e4
- twitter settings:**
  - CONSUMER KEY:** Str9v4TMUjSH71oCUBrw
  - CONSUMER SECRET:** Nj4MmMjS26swN4s82hv5j8aL9lhv8qk3T7L0
- google settings:**

### User Authentication

This section displays five user authentication options, each with a corresponding icon and label:

- Facebook:** Represented by the Facebook 'f' logo.
- Twitter:** Represented by the Twitter bird logo.
- Microsoft:** Represented by an envelope icon.
- Google:** Represented by the Google 'G' logo.
- Active Directory:** Represented by a diamond-shaped icon with three nodes.

### Store Data in the Cloud

This section displays four cloud data storage options, each with a corresponding icon and label:

- SQL:** Represented by a cylinder icon.
- Table Storage:** Represented by a grid icon.
- Blob Storage:** Represented by a document icon.
- Mongo DB:** Represented by a leaf icon.

- Scripting: Node.js !
- Custom Node.js modules
- Custom API

The screenshot displays a web application interface with a top navigation bar containing 'BROWSE', 'SCRIPT', 'COLUMNS', and 'PERMISSIONS'. The 'SCRIPT' tab is active, showing a script editor with the following code:

```
1  
2 function read(query, user,  
3  
4     query.take(20);  
5     query.orderByDescendir  
6  
7     request.execute();  
8  
9 }
```

Below the script editor, a panel titled 'report\_on\_new\_submissions' shows configuration options for 'CONFIGURE' and 'SCRIPT', a 'status' field, and run schedules: 'LAST RUN' on 'Tue Jul 09 2013, 5:00:00 AM' and 'NEXT RUN' on 'Tue Jul 09 2013, 5:00:00 PM'.

A dark overlay box contains the following JavaScript code:

```
function insert(item, user, request) {  
    var uuid = require('node-uuid');  
    item.uuid = uuid.v1();  
    request.execute();  
    console.log(item);  
}
```

The bottom of the screenshot shows a navigation bar with 'DASHBOARD', 'DATA', 'API', 'SCHEDULER', 'PREVIEW', 'PUSH', 'IDENTITY', 'CONFIGURE', 'SCALE', 'PREVIEW', and 'LOGS'. The 'API' tab is active, displaying a table of API endpoints:

NAME	GET	POST	PUT	PATCH	DELETE
photosubmissionact...	Everyone	Users	Admins	Admins	Admins



# A few of our Linux / Azure Customers



codeanywhere

- Codeanywhere online IDE
- Scale, reliability & management
- 2 VPS Linux servers to 20+ IaaS VMs
- Trial engagement & ease of migration (2 days)
- IaaS (Linux)

## Scale



- Bicycle retail mgmt system
- Reduced IT support, development cost & scale
- Ubuntu VM for headless web automation tests
- Broader IaaS → PaaS strategy
- IaaS (Linux & Windows), Cloud Services

## Speed



- Online newspaper, podcast & mall websites
- Security (DDoS), reliability, easier management & cost
- Custom PHP (LAMP)
- DDoS & scale issues – time to move to cloud
- IaaS (Linux & Windows) & PaaS

## Security

# A few of our Java on Azure customers



- BI & Analytics extension
- Fast time to market, flexible development & scale
- Java / Tomcat + Jiffy/Solr
- Time pressure (3 mo)
- Table storage & Cloud Services / PaaS

## Speed



- Call center solution
- Scale, management & efficiency + heterogeneity
- Java EE / JBoss
- 3-day windows azure lab
- Looked at Google / Amazon
- SQL Azure

## Scale



- HPC middleware ([case study](#))
- Shorten sales cycle by 70%, increase revenue
- Java on Linux + Postgres
- Strategic alignment w/ MS
- Moved away from AWS / EC2 because of Windows skillset
- SQL Azure

## Skills