

Infrastructure as a service to its maximum

A cultural change

Raymond Kao

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Microsoft



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Chief of Awesome Officer
No lion is born king



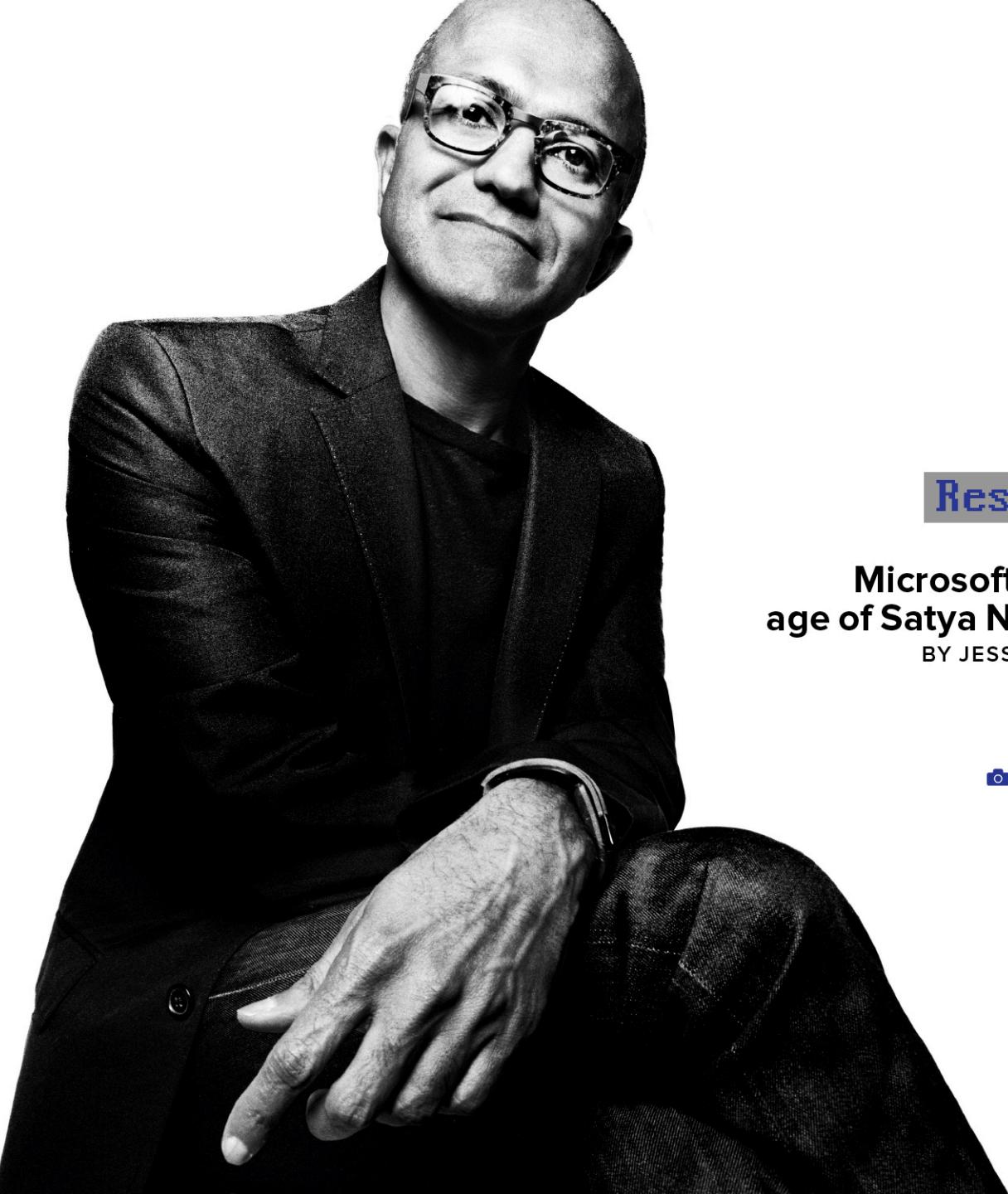
A long long time ago...



A [not so] long time ago...

MAKE WEB
NOT WAR

Today



Restart

**Microsoft in the
age of Satya Nadella.**

BY JESSI HEMPEL

PLATON

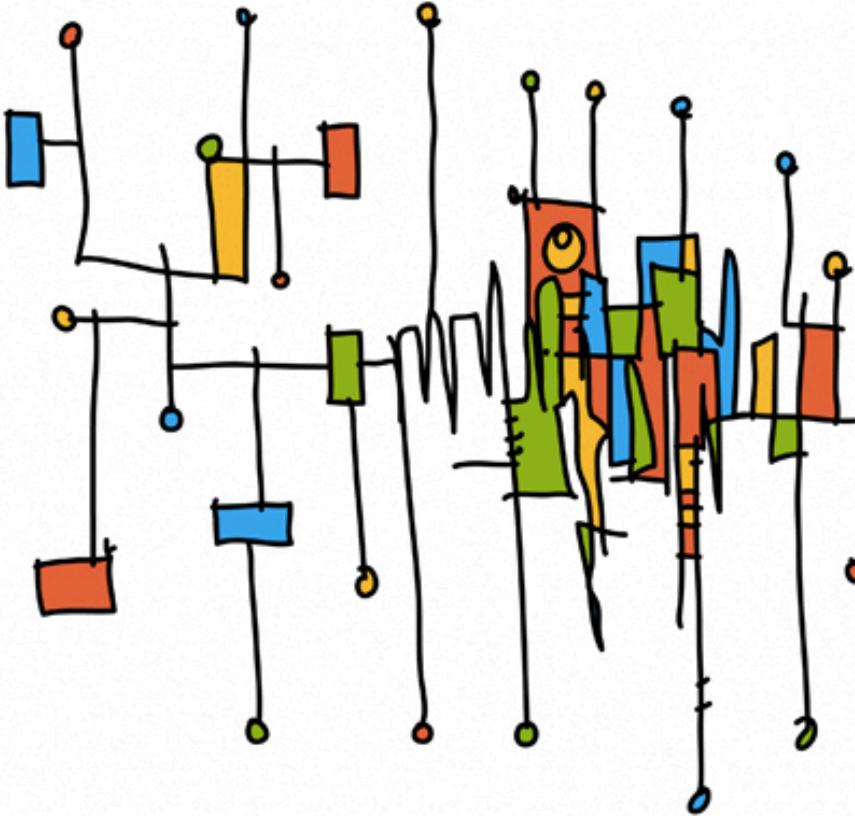
Tomorrow



```
(version_compare("5.2", PHP_VERSION, ">") {      if (!defined('PSI_CONFIG_FILE') ||  
     ("PHP 5.2 or greater is required."  
} ( extension_loaded("pcre"))  
die("phpSysInfo requires the PCRE extension  
properly.");  
  
require_once APP_ROOT.'/includes/functions.php';  
  
// Load configuration  
require_once APP_ROOT.'/config/config.php';  
  
if (!defined('PSI_CONFIG_FILE') || !defined('PSI_INTERNAL_XML')) {  
    $tpl = new Template("/templates/html/error_config.html");  
    echo $tpl->fetch();  
}  
  
if (version_compare("5.2", PHP_VERSION, ">") {  
    if (!defined('PSI_CONFIG_FILE') ||  
        $tpl = new Template("/templates/html/error_config.html");  
    echo $tpl->fetch();  
    die();  
    order to work  
    * internal xml or external  
    * external is needed with  
    define('PSI_INTERNAL_XML', false);  
  
    if (extension_loaded("pcre")) {  
        ("PHP 5.2 or greater is required."  
    }  
}
```

Let's get back to today...

SOFTWARE IS
THE ART OF
CREATING
SOMETHING
OUT OF
NOTHING.



@microsoft

@gapingvoid



Microsoft on GitHub

Search all Microsoft repos...



Overall



2080 Repos

263626 ★ Stars



199095 ⚡ Forks

32685 Open Issues



All Repos

api-guidelines

Microsoft REST API Guidelines

★ 5007 ⚡ 366

vscode

Visual Studio Code

★ 17730 ⚡ 2439

monaco-editor

A browser based code editor

★ 3046 ⚡ 156

yanke

ChakraCore

CNTK

Announced at
Github's Octoverse
last week:

**Microsoft is the #1
organization with the
most OSS
contributors!**

Organizations with the most open source contributors

	Microsoft	16,419
	facebook	15,682
	docker	14,059
	angular	12,841
	google	12,140
	atom	9,698
	FontAwesome	9,617
	elasticsearch	7,339

THREE REASONS INVESTORS LIKE MICROSOFT RIGHT NOW

▼ 1. IT'S AN OPEN COMPANY.

With Nadella at the helm, Microsoft is more willing to work with the rest of the technology industry than in years past. That keeps it from being an old-guard "stack" vendor and makes it a major player in the broader tech ecosystem.

▼ 2. IT'S ALL IN ON THE CLOUD.

Cloud computing is considered a massive growth opportunity for the entire tech industry. Thanks to savvy prior investments in infrastructure and services, Microsoft has the global scale and know-how to win big.

▼ 3. IT'S GOT A HYBRID STRATEGY.

"Hybrid cloud," that is. Most companies won't want to put all of their data in the public cloud. Most won't want to store it all privately, either. Microsoft is well-positioned with assets that serve clients in both places.

- Andrew Nusca, [Fortune](#)



The Market is Embracing Our Open Source Transformation

"I know way too many Linux users who think of Microsoft as 'The Evil Empire.' People, that was yesterday. Get over it...Look at Microsoft in 2016 and you'll see a company which offers the open-source Hadoop big data software on Ubuntu and whose CEO proclaims that Microsoft loves Linux."

Steven J. Vaughan-Nichols



"[The Red Hat partnership is] a testament to Microsoft's ability to rise above product competitiveness and be open, especially when it comes to Azure."

Eli Khnaser, Gartner



"Seeing the words 'Microsoft' and 'Linux' together in a single sentence may still come as a shock to a few people, but Microsoft says more than 60 percent of images in the Azure Marketplace are now Linux-based."

Frederic Lardinois



"The new Microsoft has taken bold new steps and has been on a path to partner with its fiercest rivals of past years. Strategically, this is what is required to be a player at scale in the cloud platform wars."

AI Hilwa, IDC



"The new Microsoft Certified Solutions Associate Linux on Azure certification <...> It's something of a surprising move, considering that Azure didn't even support Linux virtual machines four years ago, but meshes with Microsoft's current strategy of embracing open source technologies."

Blair Hanley
Frank



"Even Microsoft, long viewed as the enemy of open-source development, has focused on making its Azure cloud computing platform a hospitable place for open-source software, including different flavors of the Linux operating system"

Barb Darrow



**Like DevOps – it's a cultural change
that starts from the top**



Many more across the world and growing quickly!

Open Source Investments are Fueling the Momentum

Our Products

SQL Server ❤️ Linux

SQL Server on
Linux



HD Insight managed
service on Linux



Acquisition

Windows Subsystem for Linux

```
c:\users\markhill> bash  
root@localhost: #
```

Run Linux on Windows natively

Our Partnerships



eclipse
Microsoft joins
Eclipse
Foundation



Jenkins
Jenkins project on Azure



Certification earned
Microsoft CERTIFIED
Solutions Associate
Linux® on Azure

Partnership with the
Linux Foundation
for Linux on Azure
certification

Our Offerings

Azure Marketplace



1 out of 3

60% of all images in Azure
Marketplace are based on
Linux/OSS

1 out of 3 VMs on Azure run
Linux, and more than half of all
new VMs run Linux

Our Employees



Ross Gardler
President Apache
SW Foundation



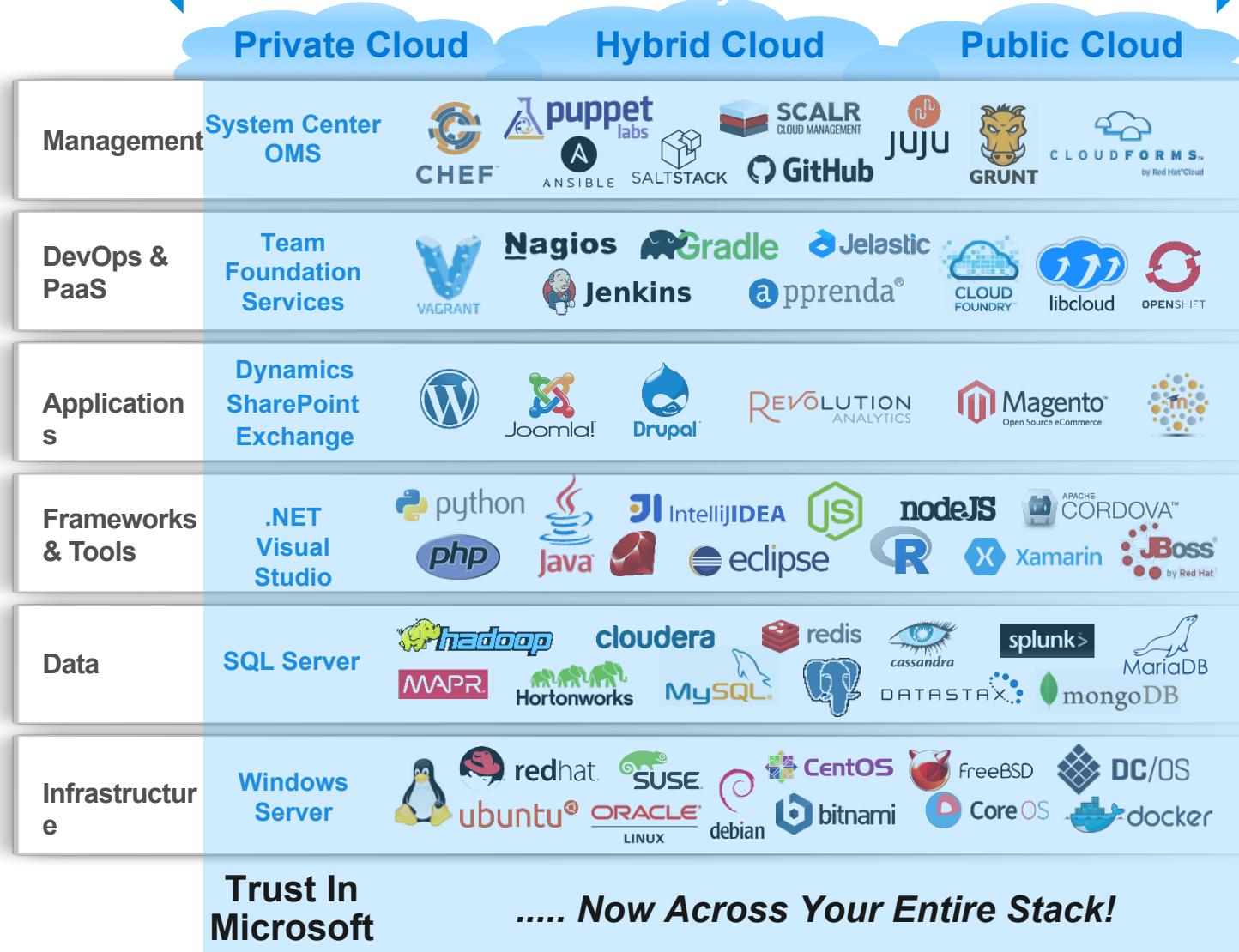
Wim Coekaerts
Oracle's Mr. Linux
joins Microsoft

600 Million+
[Microsoft Open Source Hub](#)

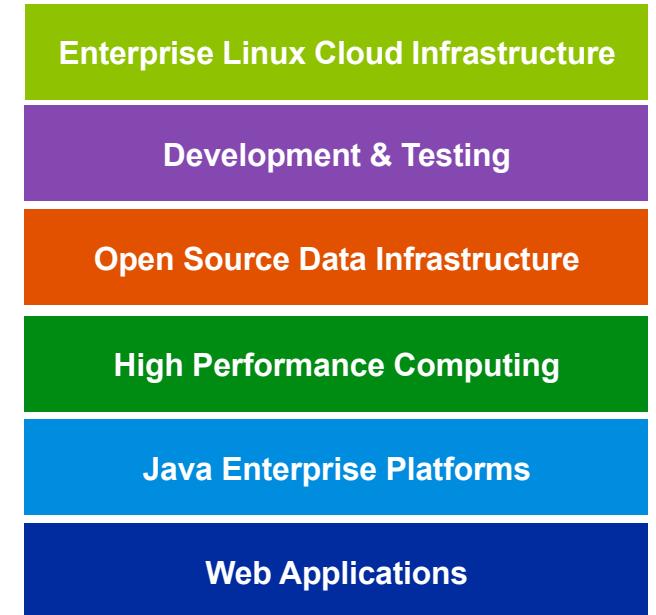
Lines of open source code
submitted to GitHub by
Microsoft engineers

Azure: Delivering Open Source Innovation in the Cloud

Addressing Your Enterprise Cloud Needs in a Trustworthy Way



How Can We Help You On Your Journey?



Azure: The Most Trusted Cloud



ISO 27001



SOC 1 Type 2



SOC 2 Type 2



PCI DSS Level 1



Cloud Controls
Matrix



ISO 27018



Content Delivery and
Security Association



Shared
Assessments



FedRAMP
JAB P-ATO



HIPAA /
HITECH



FIPS 140-2



21 CFR
Part 11



FERPA



DISA Level 2



CJIS



IRS 1075



ITAR-ready



Section 508
VPAT



European Union
Model Clauses



EU Safe
Harbor



United Kingdom
G-Cloud



China Multi
Layer Protection
Scheme
GB 18030



China
CCCPPF



Singapore
MTCS Level 3



Australia
Signals
Directorate



New
Zealand GCIO



Japan
Financial
Services



ENISA
IAF

Enterprise Linux Cloud Infrastructure

Business Needs...

To run existing and new business-critical enterprise Linux infrastructure workloads in the cloud

Microsoft Azure offers...

Industry-leading, highly scalable and uniquely hybrid enabled IaaS topology

Strategic partnership with Red Hat, spanning their product portfolio

Enterprise grade support for all popular Linux and Unix distributions

Comprehensive Red Hat support with engineers co-located in Azure support centers

Technology Partners...



....and many more

Dev/Test for Linux-based Workloads

Business Needs...

To increase developer productivity, reduce infrastructure costs and improve provisioning agility

Microsoft Azure offers...

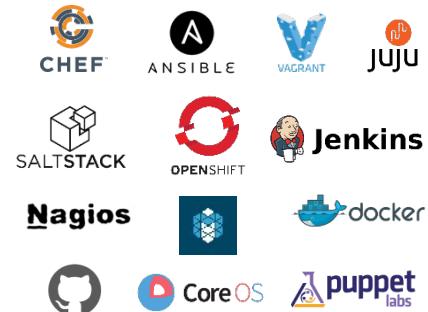
Comprehensive architectural choices spanning IaaS and PaaS. Includes VM Scale Sets, containers and service fabric

Unique DevTest Labs offering for efficient resource management

Deep support for all popular Open Source

- Application frameworks (e.g., node.js, Java, Python), including SDKs and cross-platform tools
- DevOps solutions like, Chef, Puppet, Jenkins, etc.

Technology Partners...



....and many more



Open Source Data Infrastructure

Business Needs...

Efficient and cost-effective ways to garner business insights from big data

Increased resiliency and durability for traditional transactional data stores

Microsoft Azure offers...

Most comprehensive end to end big data pipeline in the industry spanning data lake, business intelligence suites, machine learning, IoT, real-time data ingestion and Hadoop/Spark processing

Ability to store, replicate and use your data in more global regions than AWS and Google combined

Support for hybrid data scenarios

Out-of-the-box managed services for Hadoop and NoSQL databases

Technology Partners...



....and many more

High Performance Computing

Business Needs...

On-demand infrastructure to run large scale, complex compute jobs in a cost-effective manner

High-speed reliable bandwidth for distributed computing scenarios

Microsoft Azure offers...

Most powerful big compute cluster* in the cloud, connected by the fastest cloud network for parallel tasks**, running cutting-edge HPC technologies

Key Linux HPC technologies

- HPC cluster on Linux (distributed job-scheduling)
- InfiniBand (high-speed communication between nodes)
- Linux supported RDMA network (for enhancing performance of parallel tasks)

*Based on A8 – A11 big compute optimized VM SKUs

**Azure offers 40 Gbps quad InfiniBand, the highest bandwidth offered in any public cloud as of June 2016

Technology Partners...



....and many more

Java Enterprise Platforms

Business Needs...

Reaping the benefits of the cloud (economics, reach, agility, etc.) for existing Java applications

Modernizing Java-based applications through adoption of new patterns and practices for rapid development and reduced time to market

Microsoft Azure offers...

Easy development, deployment and automation of Java-based applications leveraging popular Azure integrated tools like Eclipse, IntelliJ IDEA, VS Code, etc.

Ability to move applications first, data later, because of highly scalable and uniquely hybrid-enabled IaaS topology

Broad and deep Java SDK support for all Azure services (for desktop and mobile)

Technology Partners...



....and many more

LAMP & MEAN Powered Web Applications

Business Needs...

Moving existing web-based applications to the cloud for scalability and availability

Rapidly build, deploy and dynamically scale (up and down) websites in a cost-effective manner

Microsoft Azure offers...

Reach more customers than ever – Azure has more regions than AWS and Google combined, and a great partnership with Akamai, the leading CDN provider

Automatic scaling through VM Scale Sets to deal with unpredictable demand

Strong Partnership with Bitnami, the primary vendor for most popular open source web technologies for the cloud

Support for Node, Java, PHP and Python in managed services for hosting web applications (Azure Web Apps)

Technology Partners...



....and many more



Azure Open Source Container Platform

Enabling agility with containers in the cloud

Developers



Operations



Data analysts



Docker VM Extension for Azure

Easy and programmatic way to add Docker capabilities to your VMs



Open source container-based PaaS platforms in Azure

Container-ready application platforms that benefit from Azure's native partitioning, capacity management and high availability



Azure Container Service

Optimized container hosting in the cloud with familiar tooling and your choice of orchestrator



Azure Marketplace container partners

Partner solutions that address management challenges of containers



Microsoft Azure



Workload portability



Cross-cloud orchestration



Tools integration

Windows Server (preview)

Azure Stack (roadmap)

DC/OS

Your own platform



Cloud is a new way to think about a datacenter

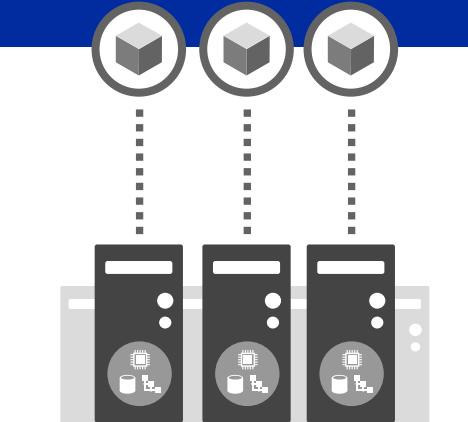
Traditional model

Dedicated infrastructure for each application

Purpose-built hardware

Distinct infrastructure and operations teams

Customized processes and configurations



Servers

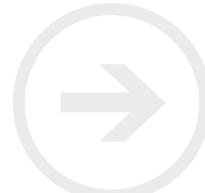
Cloud model

Loosely coupled apps and micro-services

Industry-standard hardware

Service-focused DevOps teams

Standardized processes and configurations



Services

More Resources

Visit

- Microsoft Open Source Website: <http://www.microsoft.com/opensource>
- Microsoft Open Source Blog: <http://openness.microsoft.com/blog>
- Twitter: <https://twitter.com/OpenAtMicrosoft>

Try

- Sign up for a Free Azure Trial: <https://azure.microsoft.com/en-us/trial/free-trial-open-source/>
- Try Open Source on Azure:
<https://azure.microsoft.com/en-us/services/virtual-machines/linux-and-open>

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See how customers are using Open Source + Microsoft Azure: <http://customers.microsoft.com>

Thanks