

Cloud Computing

A Microsoft Perspective

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Agenda

- Cloud Computing Defined
- Data Center Innovations
- Online Applications
- Cloud Platform

Six Areas of Enterprise Investment

Low-Cost Computing



Corporate Environmental Sustainability



Consumerization of IT



Business Intelligence

Innovation for Growth



Cloud Computing



Investing U.S.\$9.5 billion in R&D in FY10

Transformational Era

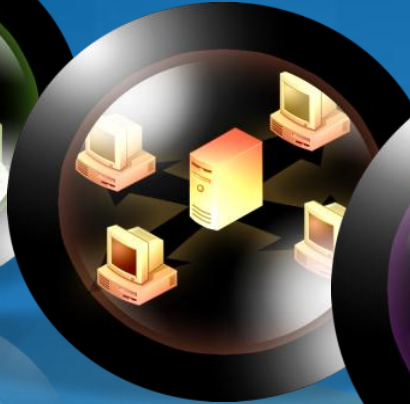
Mainframe



PC



**Client
Server**



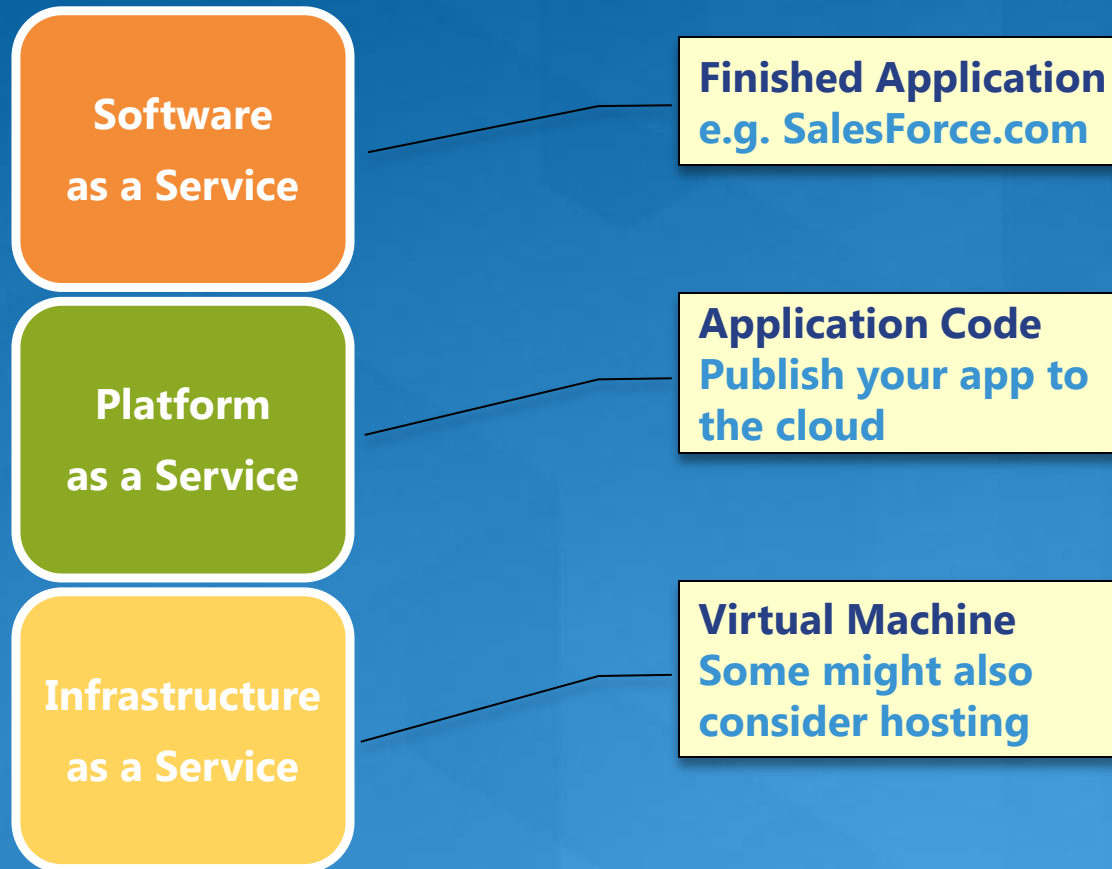
**Web
Services**



Cloud



The Cloud Computing Taxonomy



Where Do Applications Live?

Application runs on-premises



- Bring my own machines, connectivity, software, etc.
- Complete control and responsibility
- Upfront capital costs for the infrastructure

Application runs at a hoster



- Rent machines, connectivity, software
- Less control, but fewer responsibilities
- Lower capital costs, but pay for fixed capacity, even if idle

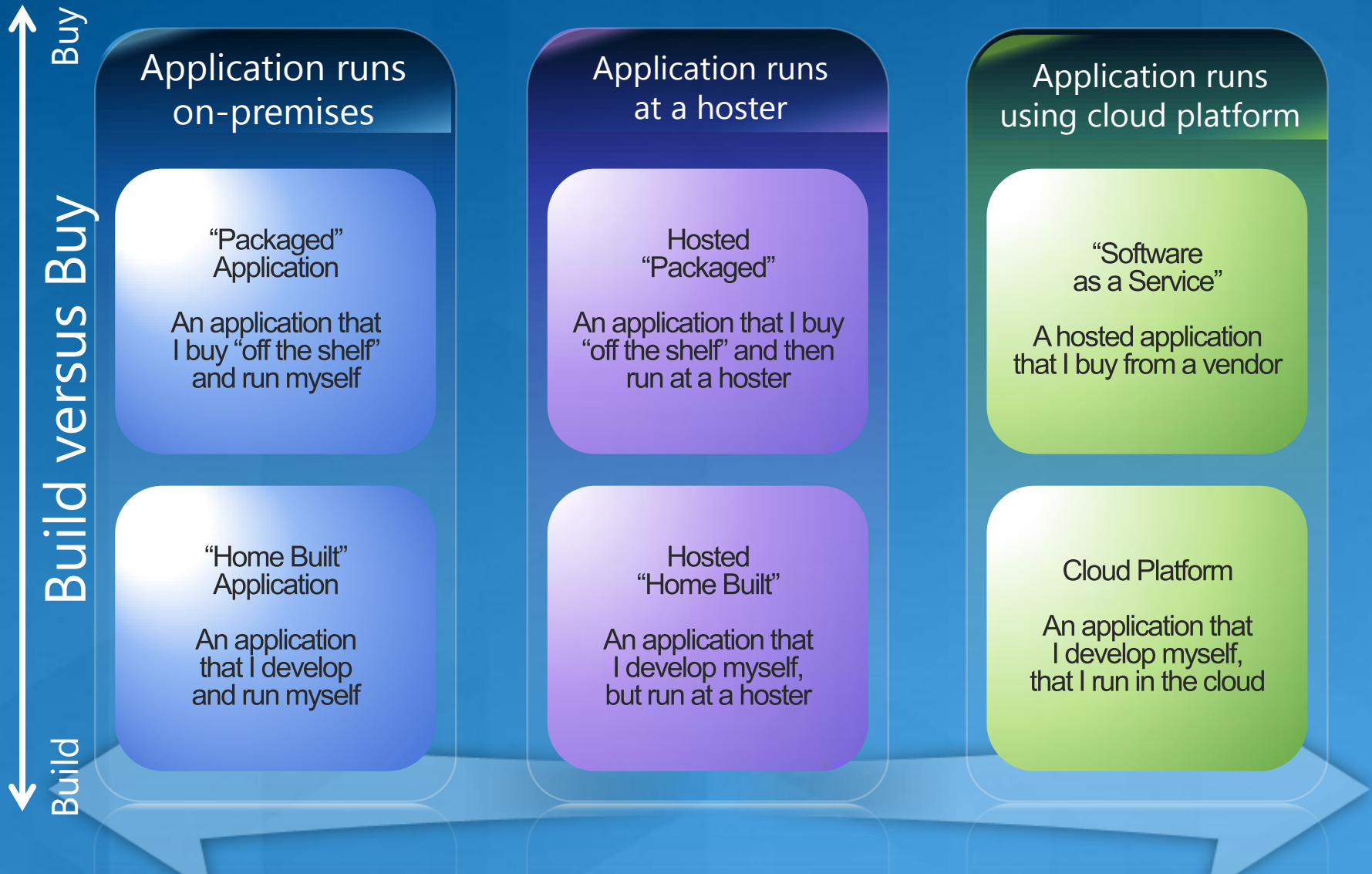
Application runs using cloud platform



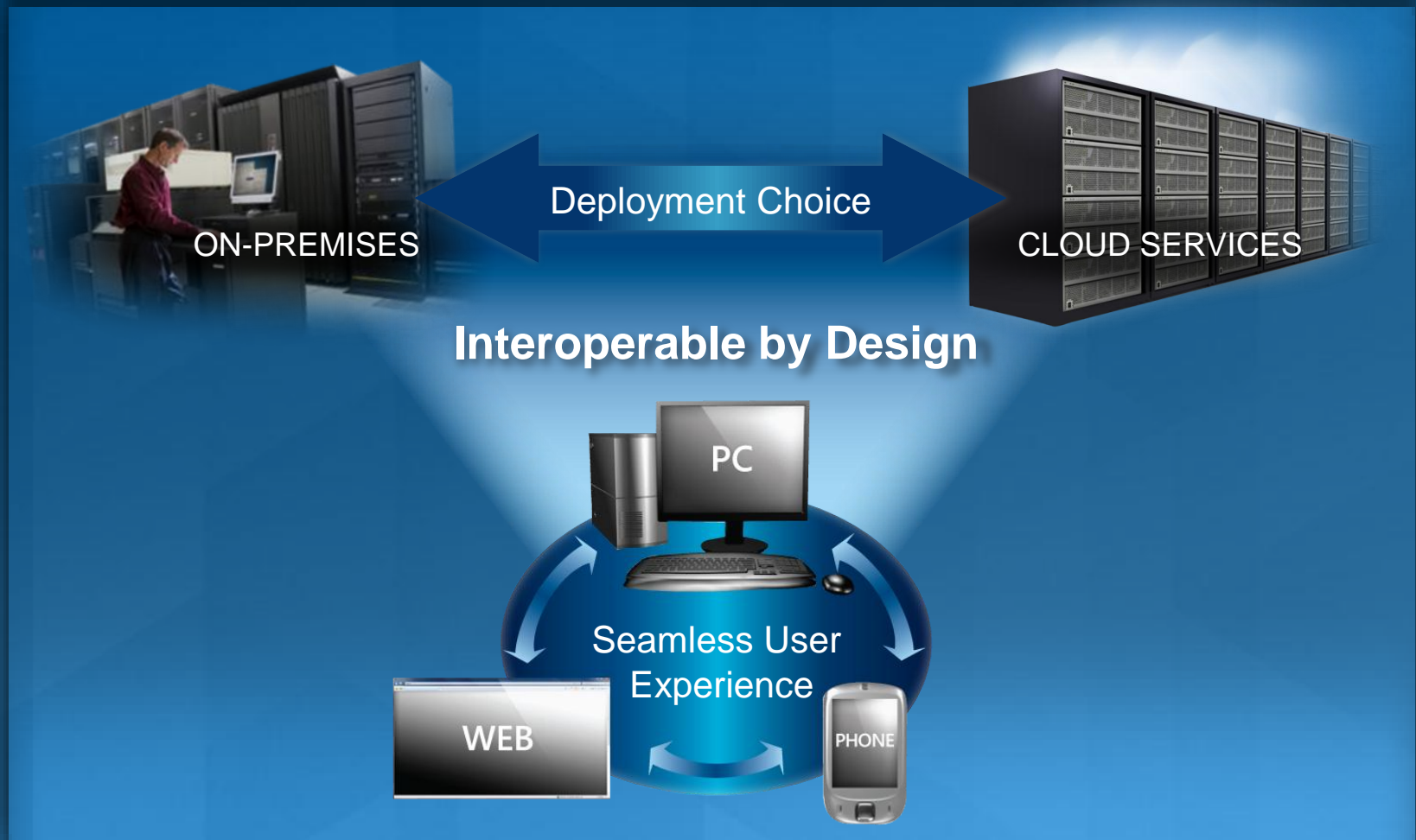
- Shared, multi-tenant environment
- Offers pool of computing resources, abstracted from infrastructure
- Pay as you go

CHOICE

Where Do Applications Live?



Power of Choice Software + Services



Microsoft Complete Cloud Platform

Live Services



MS Online Services



Azure™ Services Platform

 Live Services

 Microsoft .NET Services

 Microsoft SQL Services

 Microsoft SharePoint Services

 Microsoft Dynamics CRM Services

 Windows Azure™

Microsoft® Global Foundation Services

Infrastructure Services



Security



Global Delivery



Environment



An Overview of Business Productivity Online Suite



Integrated Capabilities

Communicate and collaborate seamlessly across applications and devices

Instant Messaging

E-mail

Web Conferencing

Calendaring

Work Flow

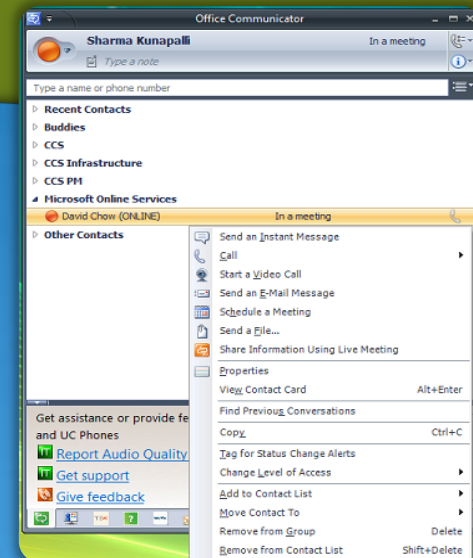
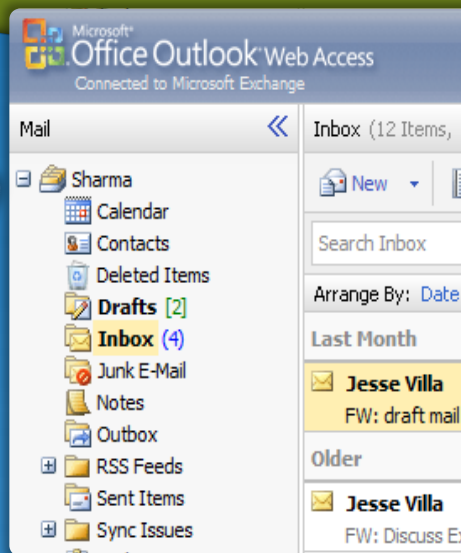
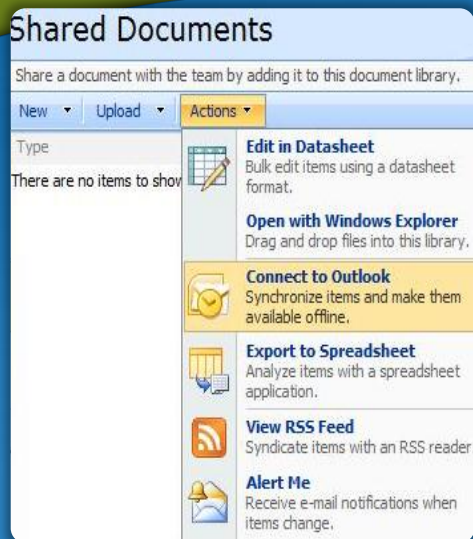
Mobility

Document Sharing

Offline Access

Presence

Archiving



Microsoft Exchange Online

Microsoft SharePoint Online

Microsoft Office Communications Online

Microsoft Office Live Meeting

Feature Overview

Microsoft® Exchange Online

- Larger mailboxes - up to 25GB Mailbox
- Outlook and Web Access
- Anti-Virus/Anti-Spam
- Shared Calendars, Contacts & Tasks
- Active Sync Mobile Devices
- Blackberry Device Support*
- Compliance Archiving*

Microsoft® SharePoint® Online

- Collaboration
- Portal
- Enterprise Content Management
- Search
- Business Process Forms
- Business Intelligence
- Platform & Extensibility

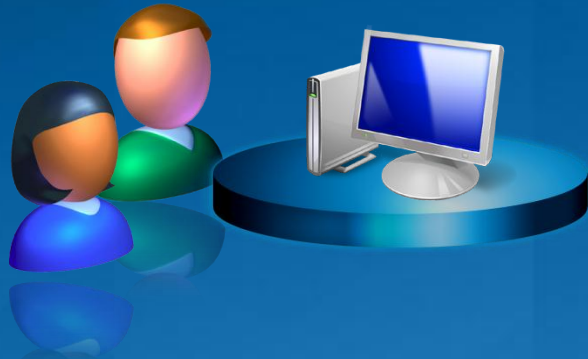
Microsoft® Office Live Meeting

- Web Conferencing
- Small group collaboration to large events
- Desktop sharing, chat, question manager
- Training support and virtual breakout rooms
- VOIP or PSTN voice support
- Live 360 degree panoramic video

Microsoft® Office Communications Online

- Instant Messaging and Presence
- Group IM
- Address Book Search
- Distribution List Expansion
- File Transfer
- 1:1 Audio and Video

Right Features for Right Users



Deskless Worker is a low cost offering to users that do not have messaging and collaboration capabilities today

Exchange Online Deskless Worker

- 500 MB mailbox
- Outlook Web Access Light only
- Messaging, calendar, contacts
- Anti-Virus / Anti-Spam
- Optional archiving and mail encryption
- No Mobile Access

SharePoint Online Deskless Worker

- Read-Only Access to calendars, contacts, portal sites only
- Read-write access to Wikis, Blogs and Forms
- Set-mail alerts
- Search capabilities
- No Mobile Access

Microsoft Online Today

Business Productivity Online Suite Reference Customers



More than 1.5M seats!

Data Center Innovations



Microsoft's Data Center Evolution

Data Center Collocation
Generation 1



Quincy and San Antonio
Generation 2



Chicago and Dublin
Generation 3



Future
Generation 4
Modular Data Center



Deployment Scale Unit

Lowest Work per Watt



Server Capacity



Rack Density And Sustainability



Containers Scalability



Right Time to Market, Lower TCO Scalable Data Centers

1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Generation 4 Data Center

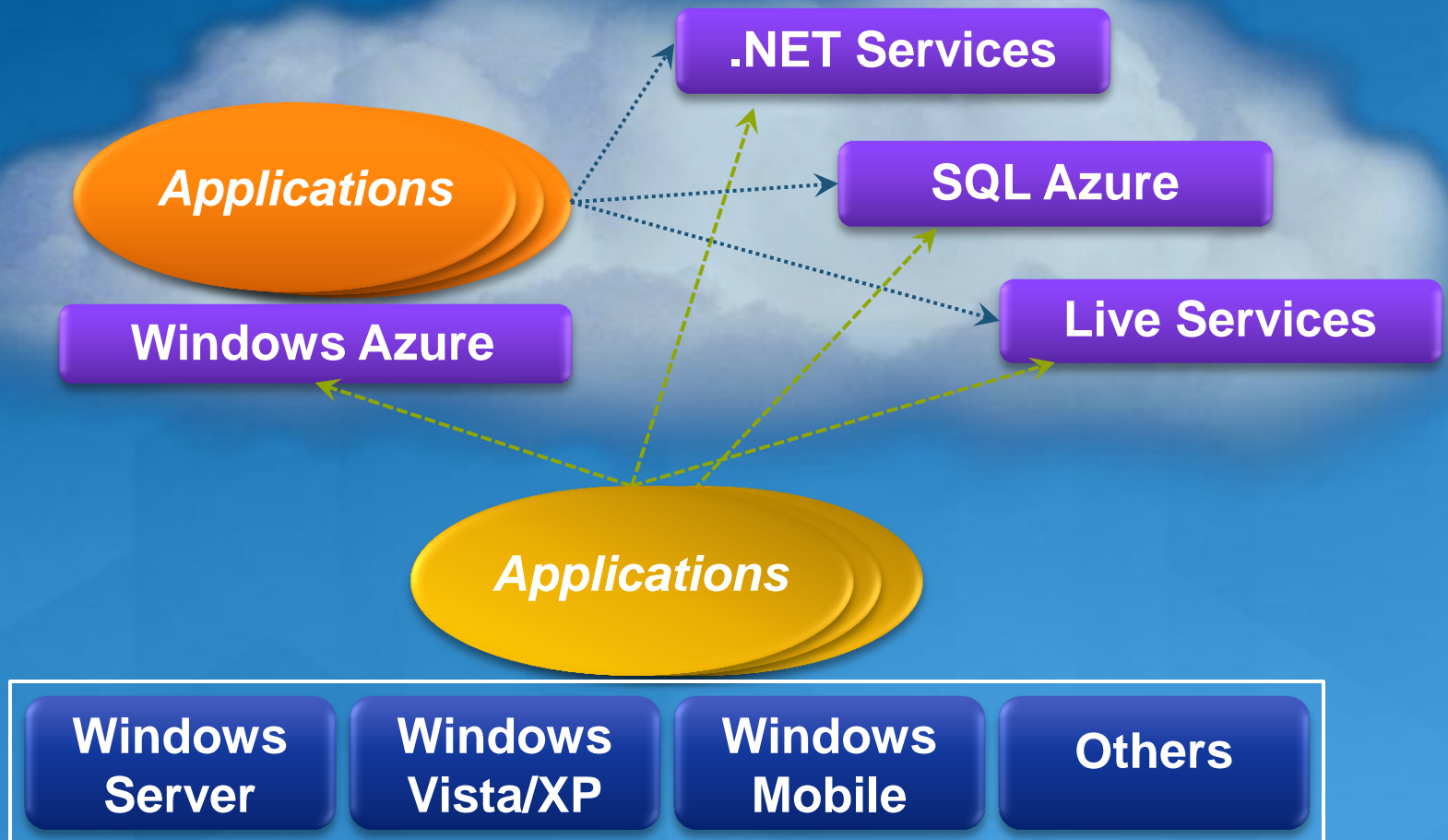


<http://www.microsoft.com/video/en/us/details/36db4da6-8777-431e-aefb-316ccbb63e4e>

An Overview of the Windows Azure Platform

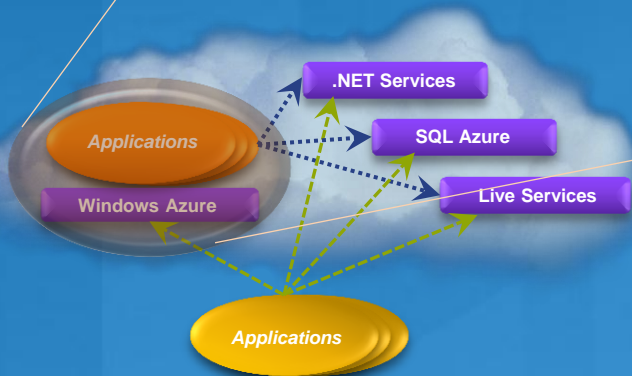
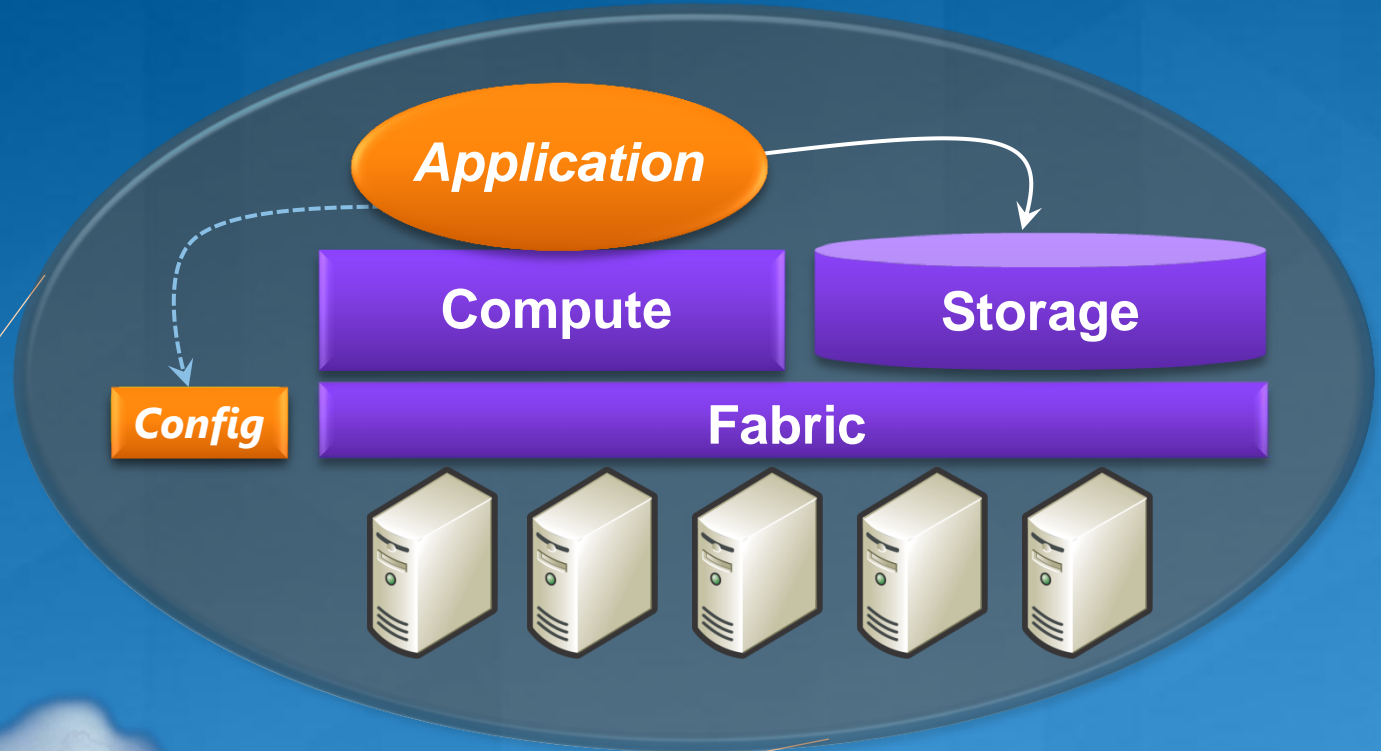


The Windows Azure Platform



Windows Azure

An illustration



- | | | | |
|----------------|------------------|----------------|--------|
| Windows Server | Windows Vista/XP | Windows Mobile | Others |
|----------------|------------------|----------------|--------|

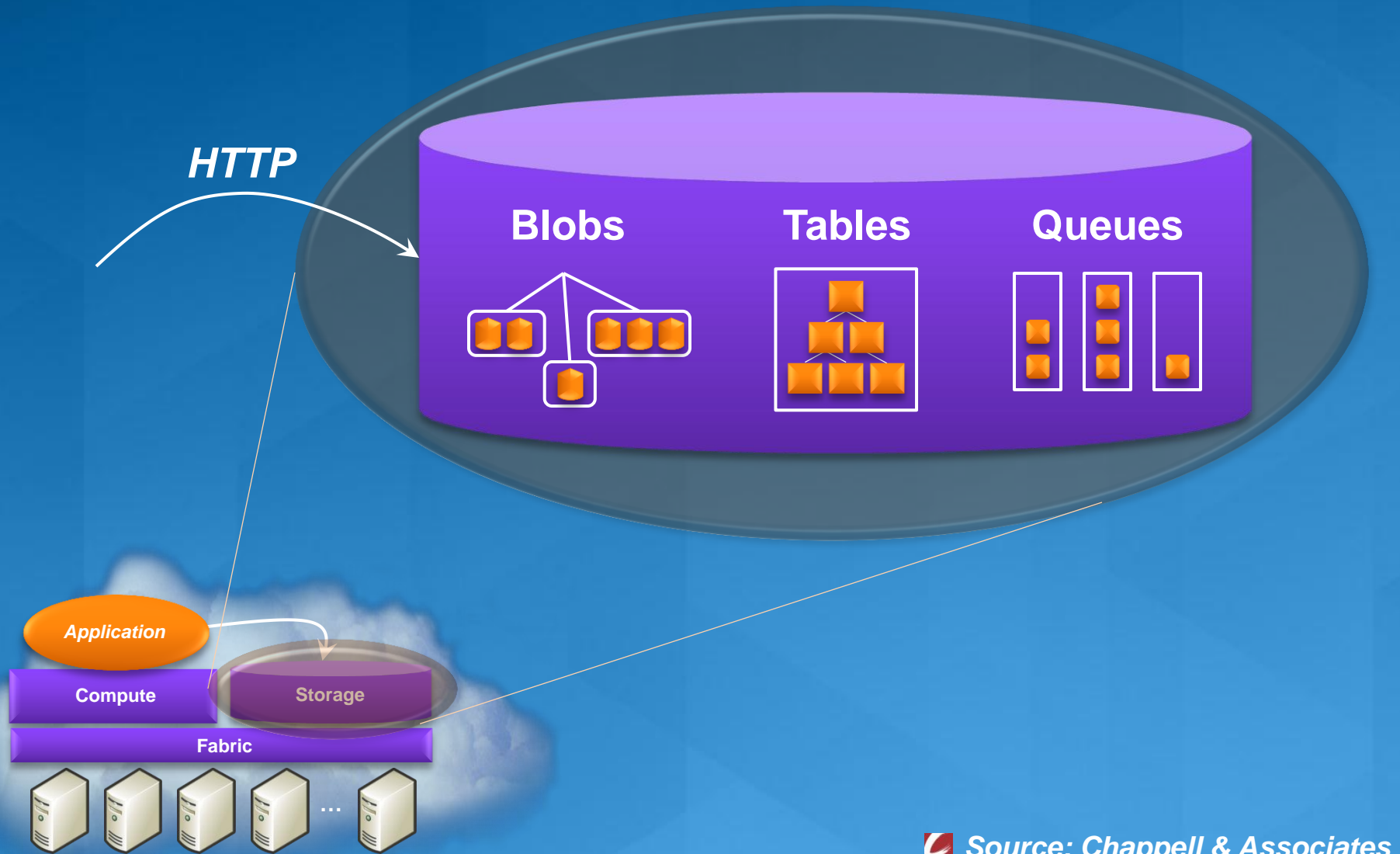
Windows Azure Compute Service

A closer look



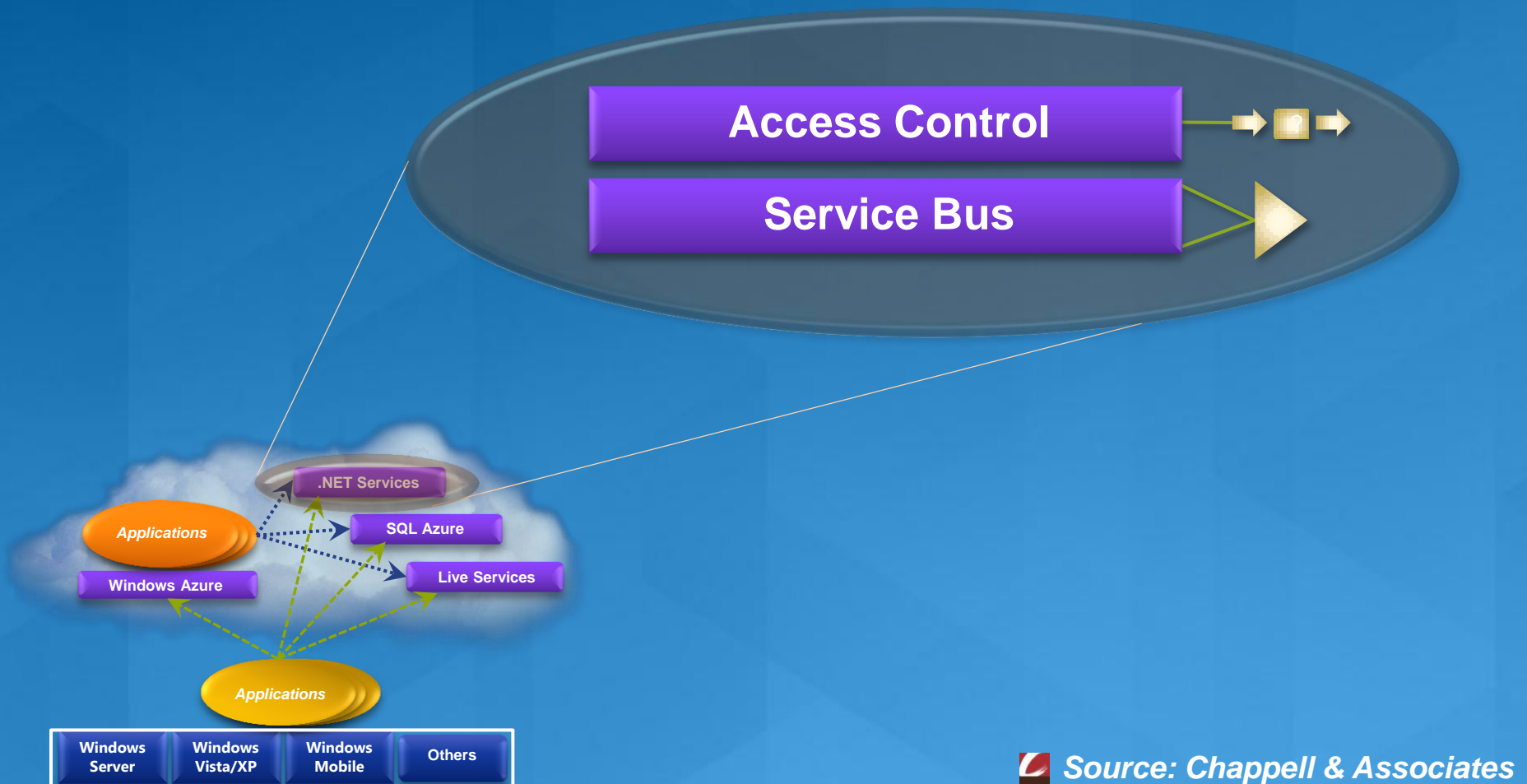
Windows Azure Storage Service

A closer look



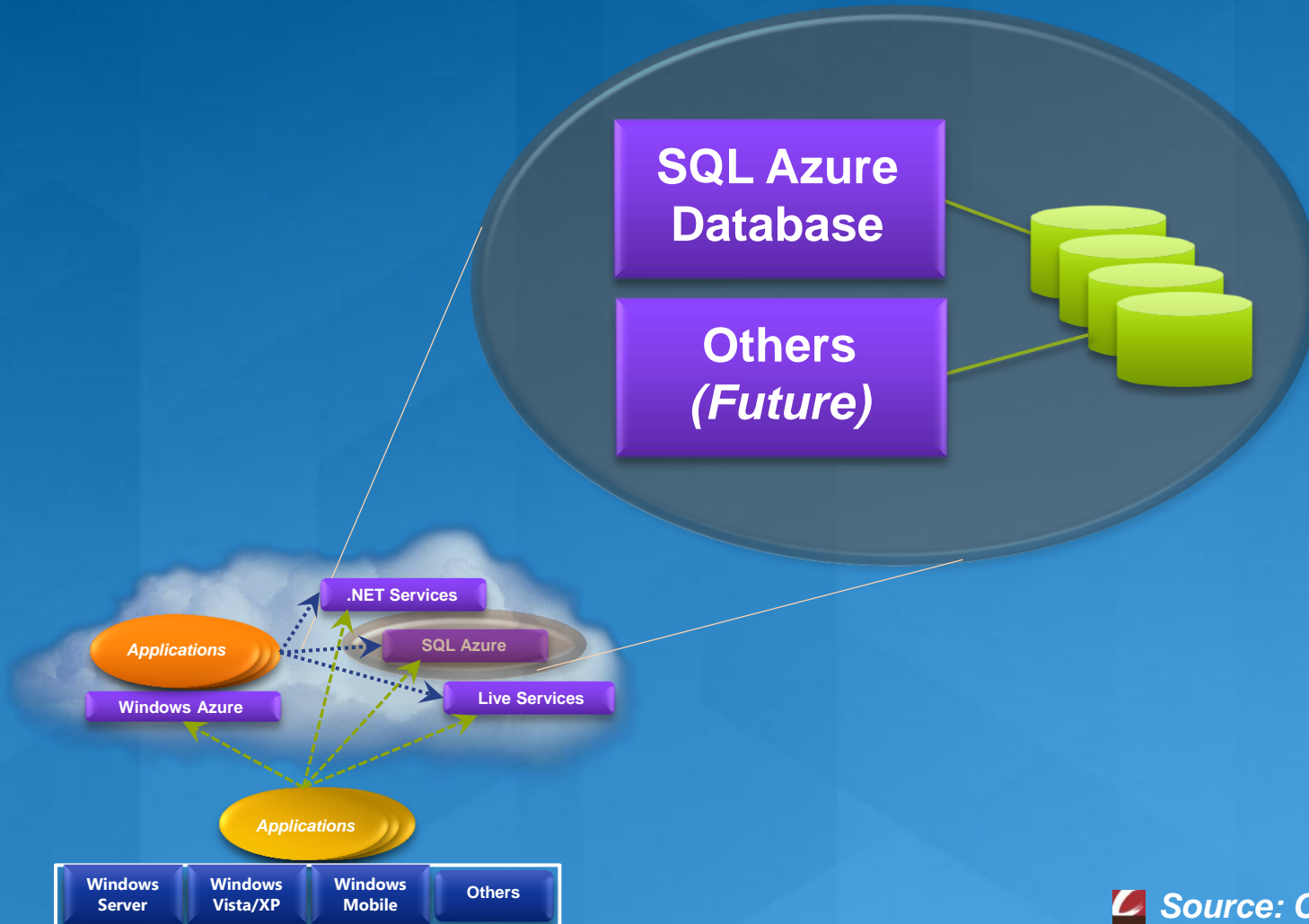
.NET Services

Infrastructure in the cloud



SQL Azure

Formerly known as *SQL Services*



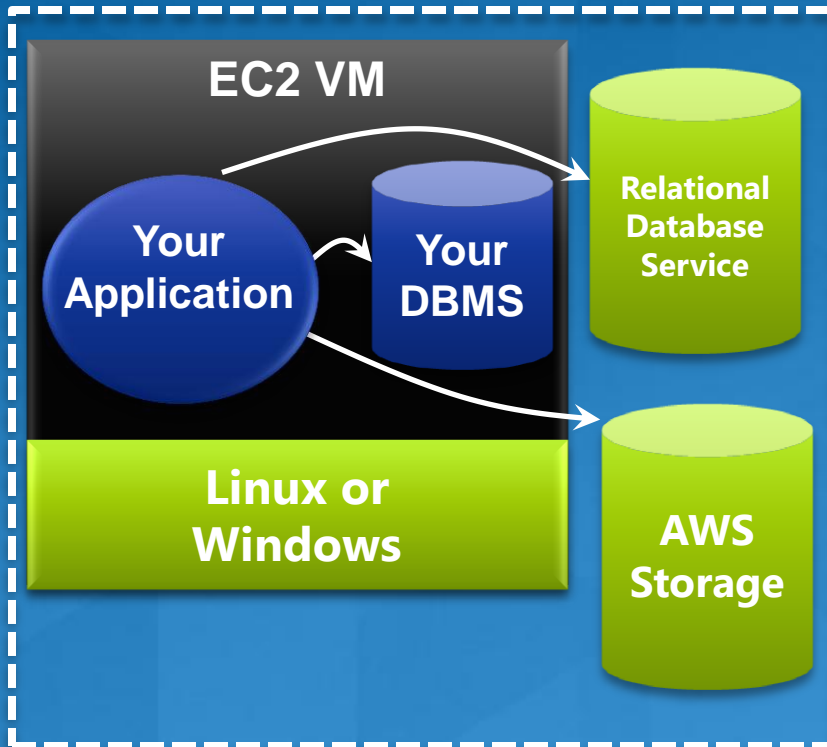
Windows Azure and Its Competitors



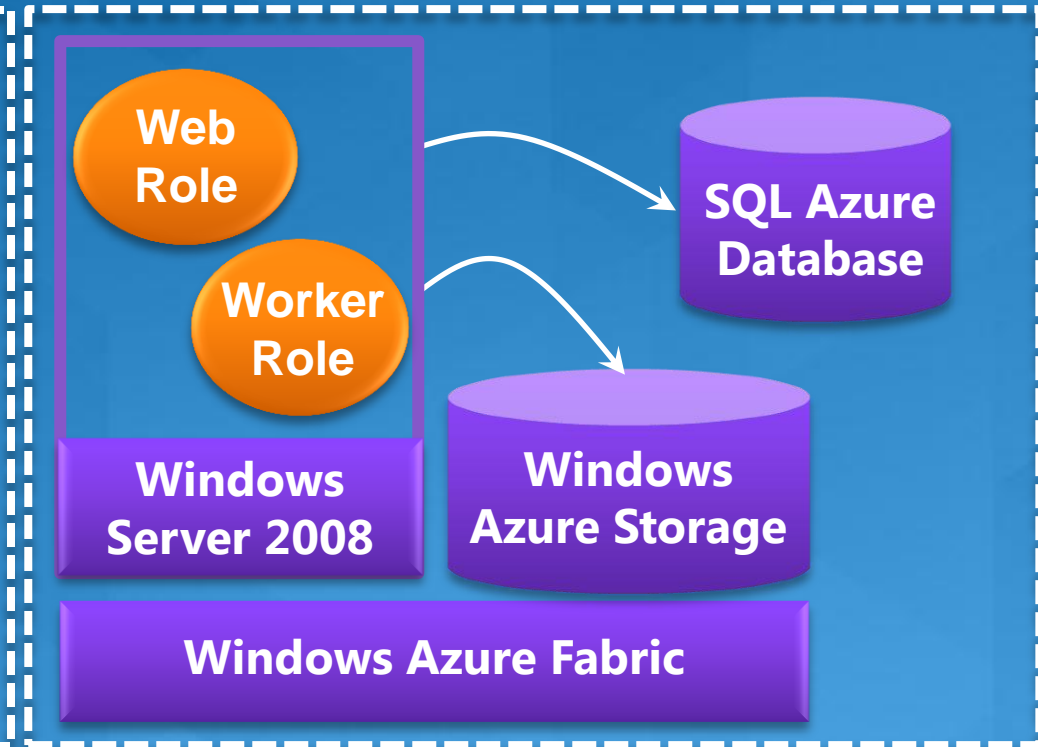
Amazon Web Services (AWS)

- AWS Elastic Compute Cloud (EC2) provides virtual machines running Linux or Windows

Amazon Web Services



Windows Azure



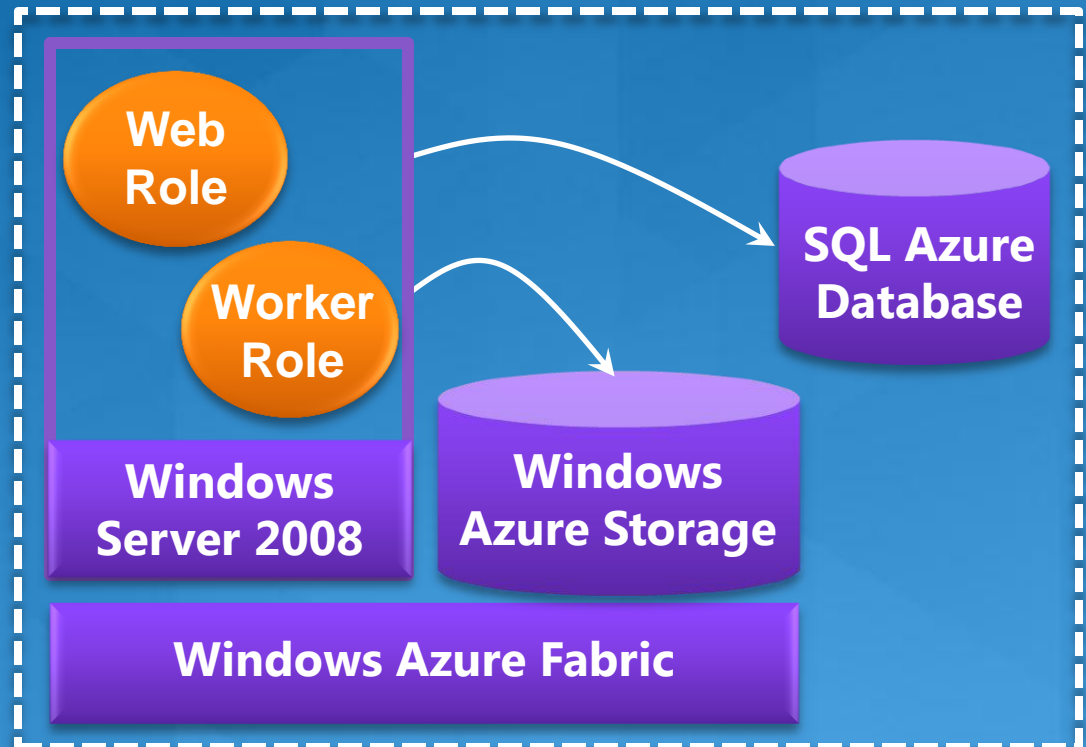
Google AppEngine

- AppEngine runs Python and Java applications

Google AppEngine



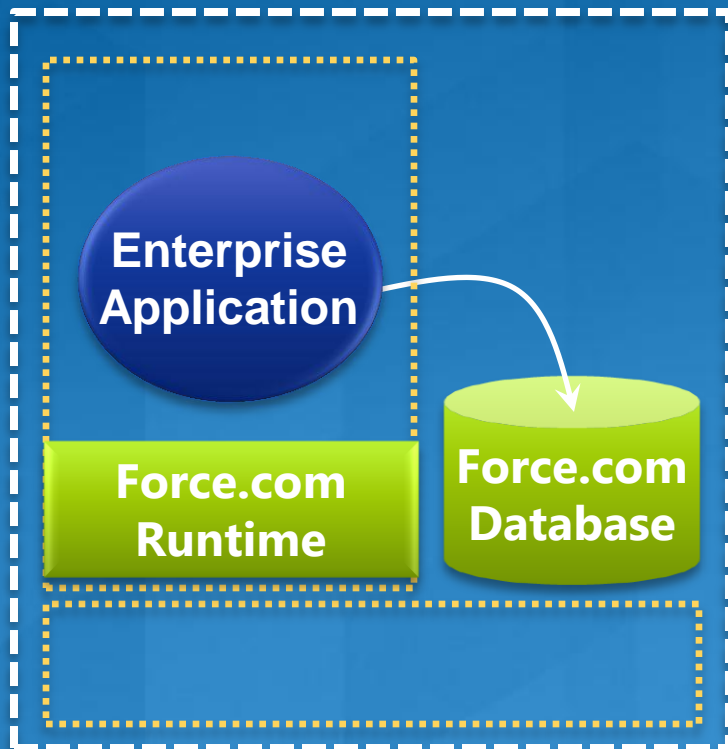
Windows Azure



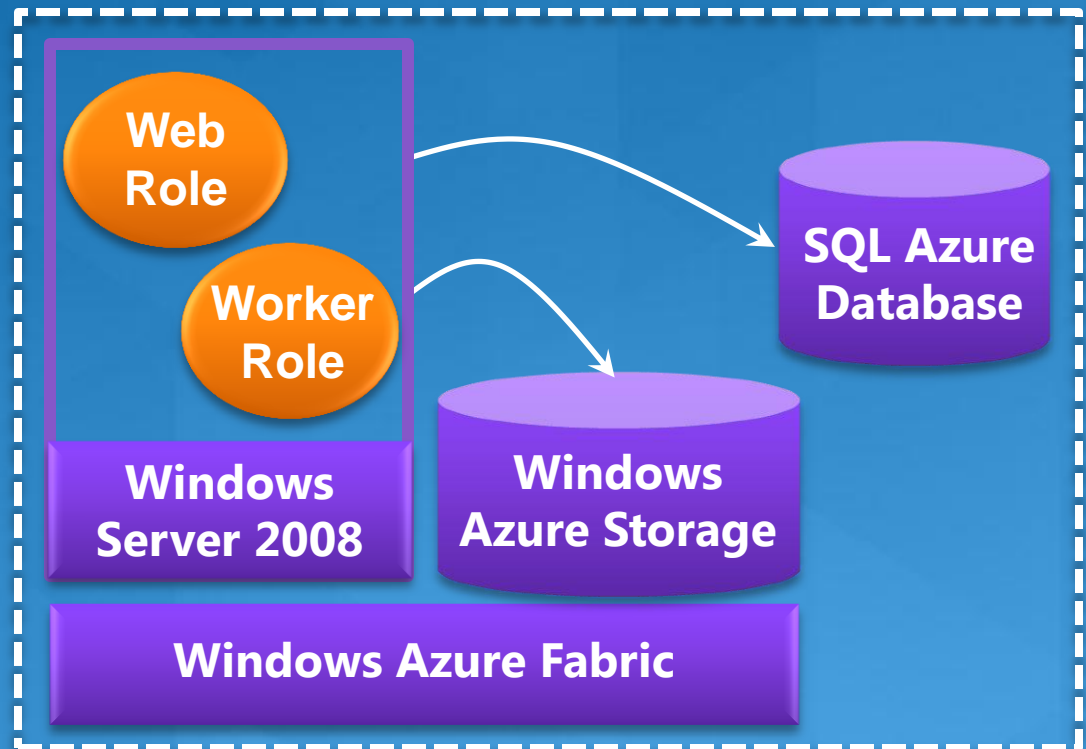
Force.com and Windows Azure

- Salesforce.com's Force.com focuses on data-driven enterprise applications

Force.com



Windows Azure



Summarizing Capabilities

	Windows Azure	Amazon Web Services	Google AppEngine	Salesforce.com Force.com
VM with admin access		<i>Elastic Compute Cloud (EC2) VMs</i>		
Web app support	<i>Web roles (Windows)</i>	<i>EC2 VMs (Linux/Windows)</i>	<i>Web apps (Python/Java)</i>	<i>Runtime (Custom)</i>
Background app support	<i>Worker roles (Windows)</i>	<i>EC2 VMs (Linux/Windows)</i>	<i>Tasks (Python/Java)</i>	
Relational storage	<i>SQL Azure Database</i>	<i>EC2 VMs (w/RDBMS) Relational Service</i>		
Blob storage	<i>Blobs</i>	<i>Simple Storage Service (S3)</i>	<i>Datastore</i>	
Scale-out storage	<i>Tables</i>	<i>SimpleDB</i>	<i>Datastore</i>	<i>Database</i>
Queues	<i>Queues</i>	<i>Simple Queue Service (SQS)</i>	<i>Task Queues</i>	

What do Enterprise customers say?

- We need lower cost solutions
- Some workers need more and some need less
- We need to scale up or down quickly
- How do make sure it's secure and redundant?
- How do you manage identity and access?
- SLA's are critical
- Can I work offline?
- It has to work with my other systems
- Is good enough really good enough?

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