

Building Applications on Azure Platform

Speaker:

Janaki Jayachandran

Practice Manager – Cloud/SaaS Specialization, Aspire Systems

Cloud Developer Conference – 10th September 2011



Agenda

- ❖ Understanding the cloud
- ❖ Azure Architecture
- ❖ Data Storage – SQL Azure / Azure Storage
- ❖ Developing, Hosting and Managing Applications in Azure
- ❖ Azure Costing
- ❖ Other Services in Azure

← → ← About Aspire

- Been in business for over 15 years
- 50+ active engagements; 875 people
- Core Competencies: Cloud Computing, Mobile, Test Automation, Microsoft & Java technologies, RIM
- Offices in Chennai, USA(San Jose, Chicago),UK(London), UAE, Germany
- ISO 9001:2008 certified

★ Awards



Deloitte. Deloitte. Deloitte.
Technology Fast 500 Technology Fast 500 Technology Fast 500
Asia Pacific 2008 Winner Asia Pacific 2007 Winner Asia Pacific 2006 Winner



•Ranked among the Top
20 Global R&D Service
Providers by Zinnov
Consulting

•Ranked in the top 500 fast growing technology companies
in Asia Pacific for 3 years in a row





Speaker



Janaki Jayachandran

Practice Manager – Cloud/SaaS Specialization, Aspire Systems

- ❖ Heads the SaaS Specialization Business unit at Aspire Systems. Instrumental in defining Aspire's focus in SaaS and Cloud Computing
- ❖ As a Practice Manager he is involved in cloud consulting with customers to guide them towards defining their cloud strategy. In addition to that he also collaborates with Aspire's Cloud/SaaS Center Of Excellence (CoE) towards building internal expertise on the various cloud technologies.
- ❖ Has successfully helped several ISVs and Enterprises to move towards cloud.
- ❖ Having worked with several customers on their cloud needs, he has expertise in both Enterprise and Consumer based SaaS applications.
- ❖ In his current capacity, he is also responsible for the delivery functions focused on SaaS/cloud space.

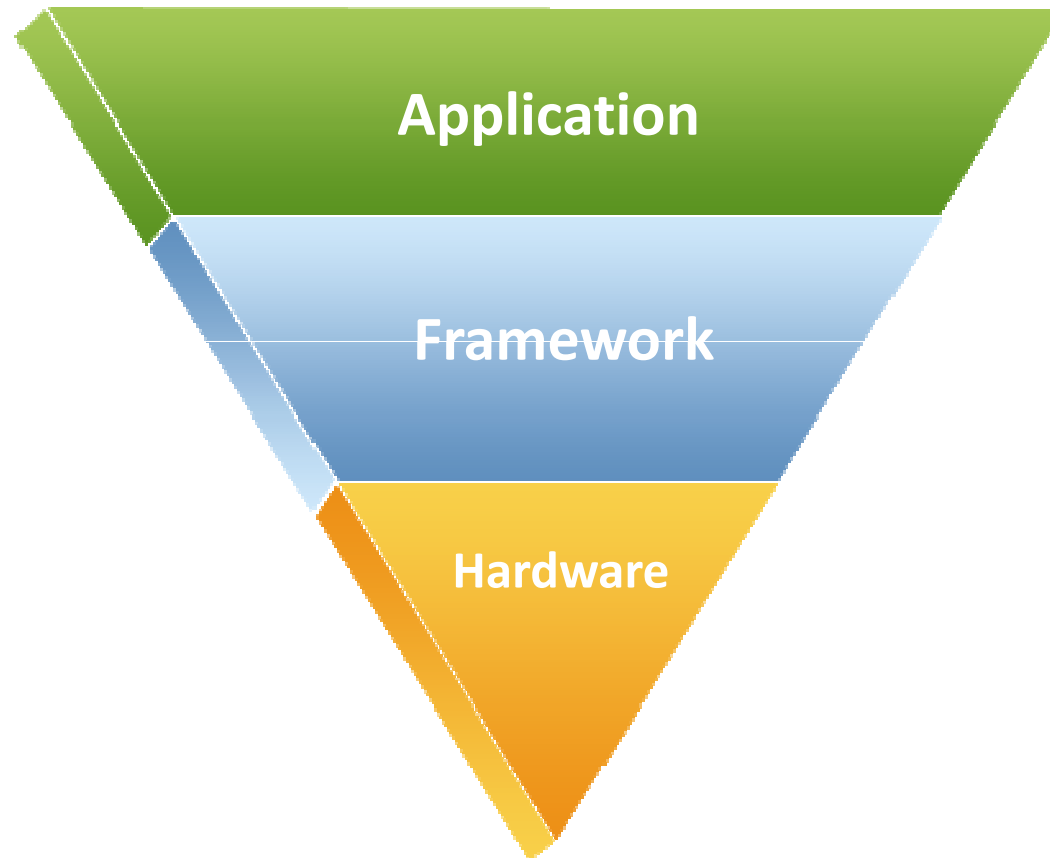


Understanding the Cloud



Understanding The Cloud

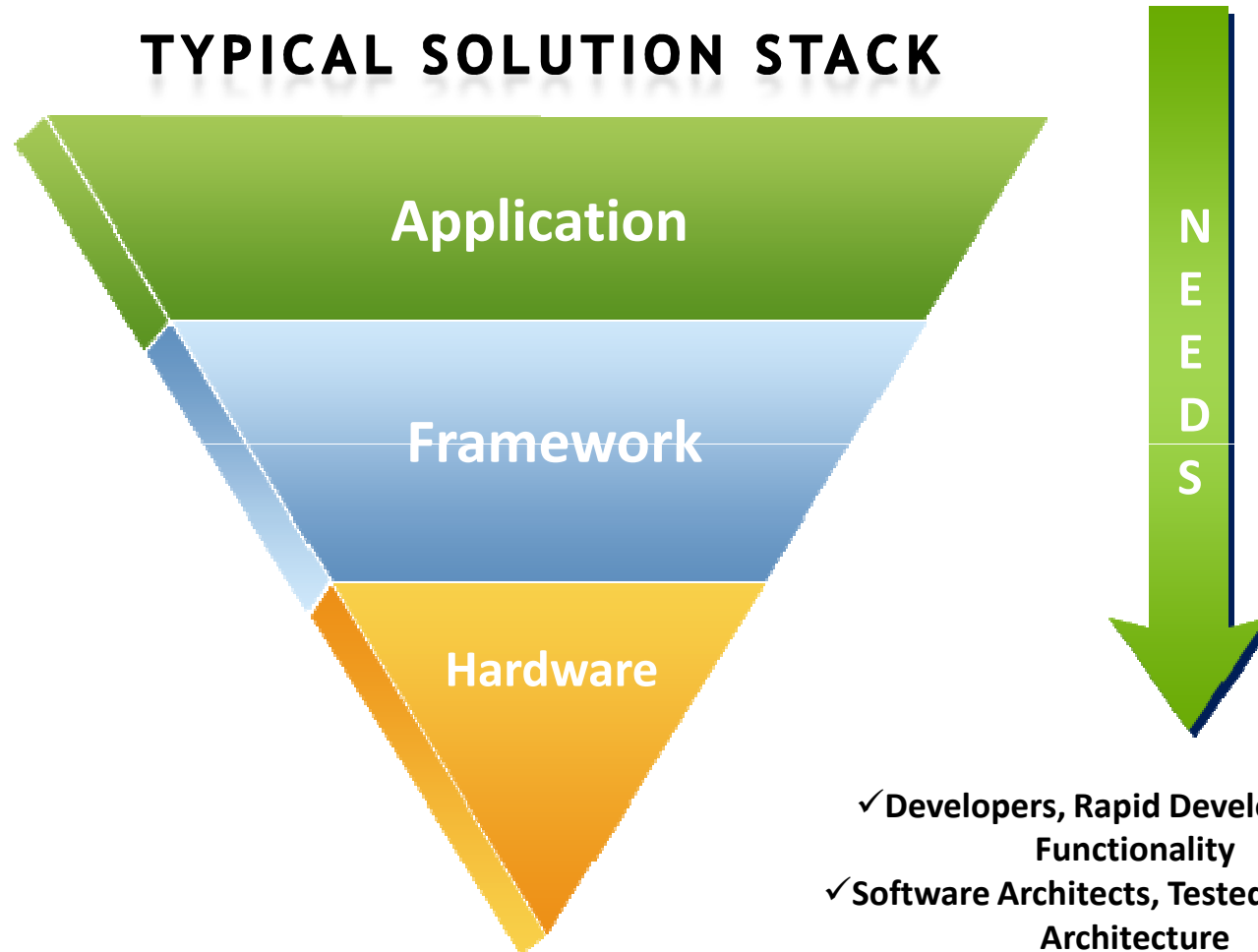
TYPICAL SOLUTION STACK





Let's Get In To The Cloud

TYPICAL SOLUTION STACK

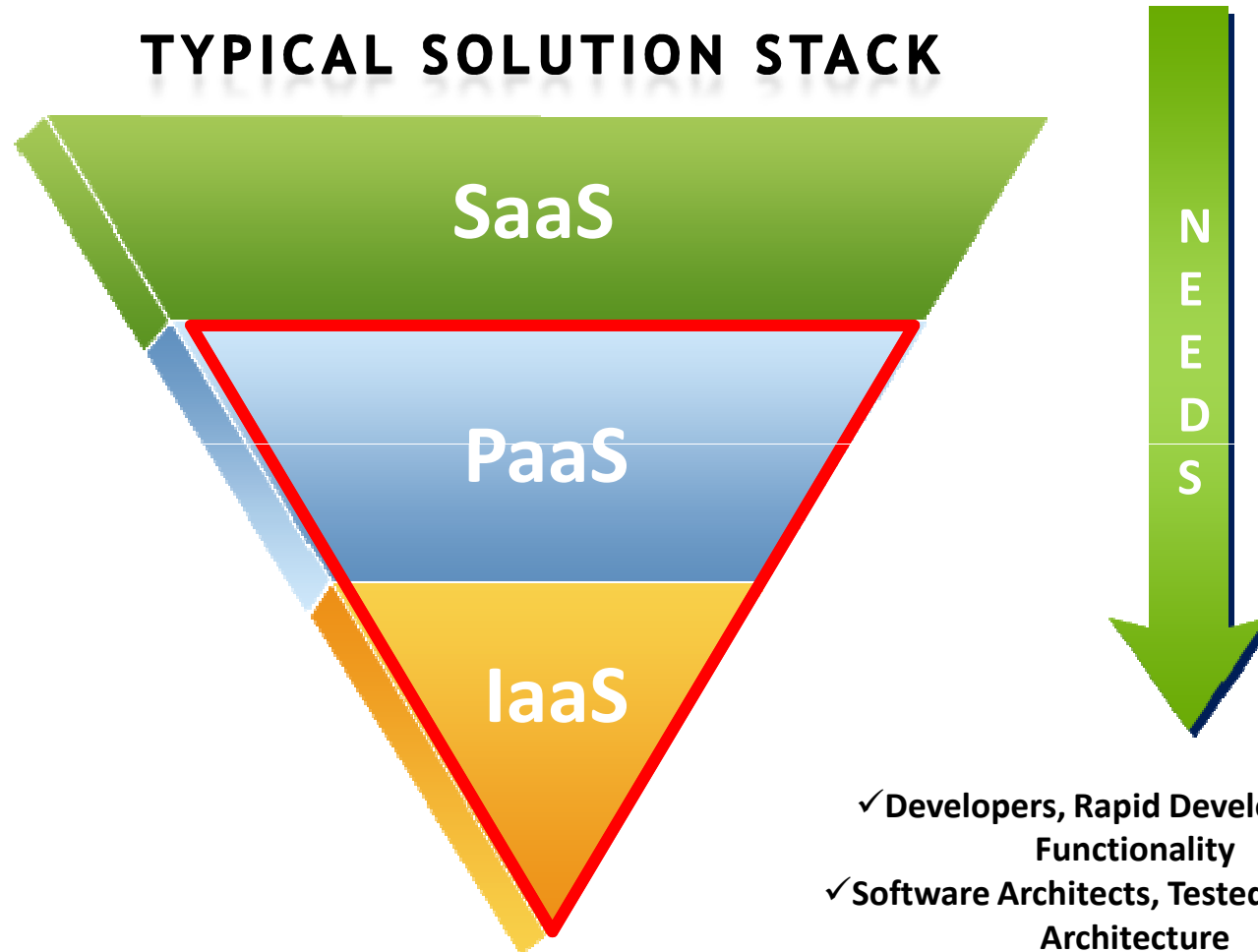


- ✓ **Developers, Rapid Development of Functionality**
- ✓ **Software Architects, Tested and Proven Architecture**
- ✓ **Network Architects, Security, Hosting**



Let's Get In To The Cloud

TYPICAL SOLUTION STACK

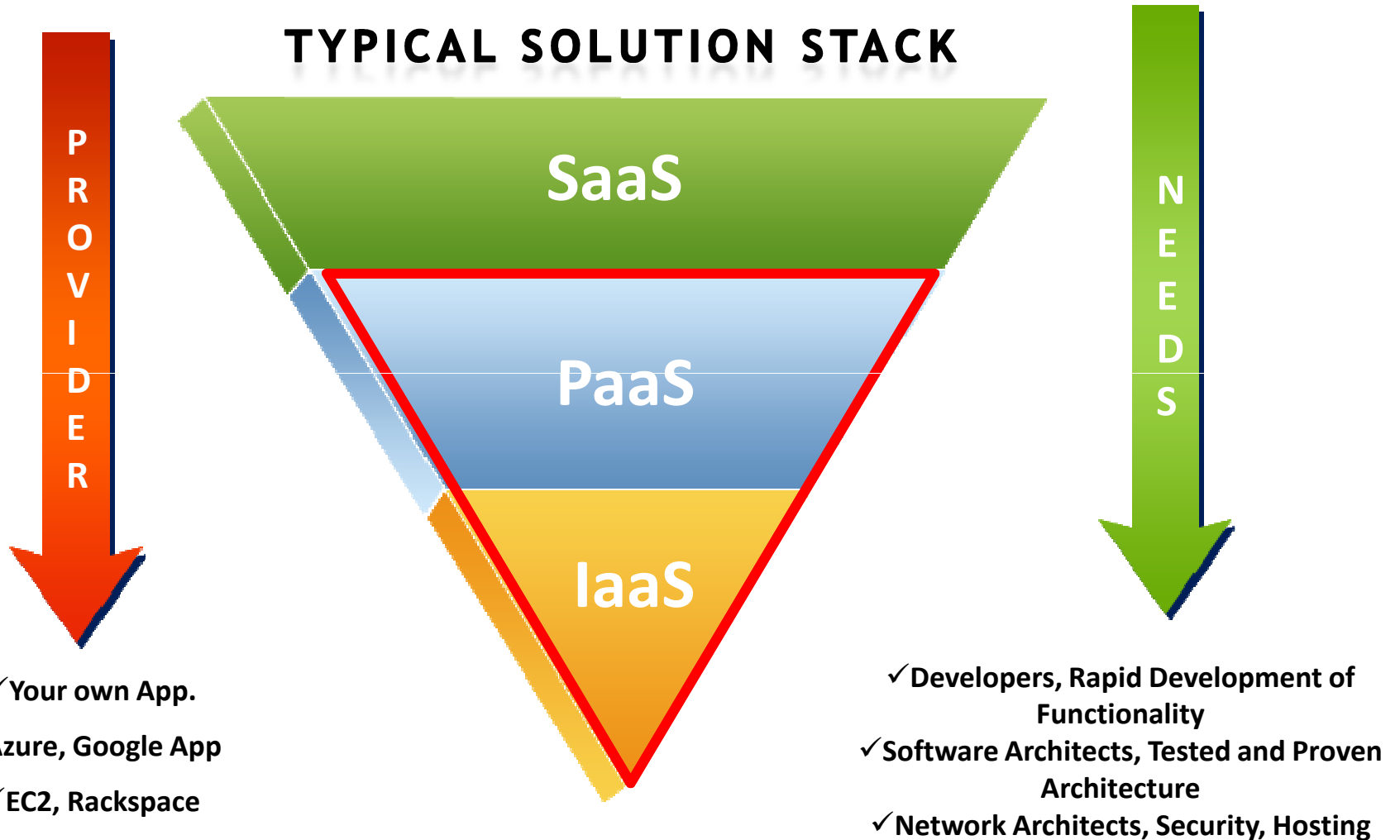


- ✓ **Developers, Rapid Development of Functionality**
- ✓ **Software Architects, Tested and Proven Architecture**
- ✓ **Network Architects, Security, Hosting**



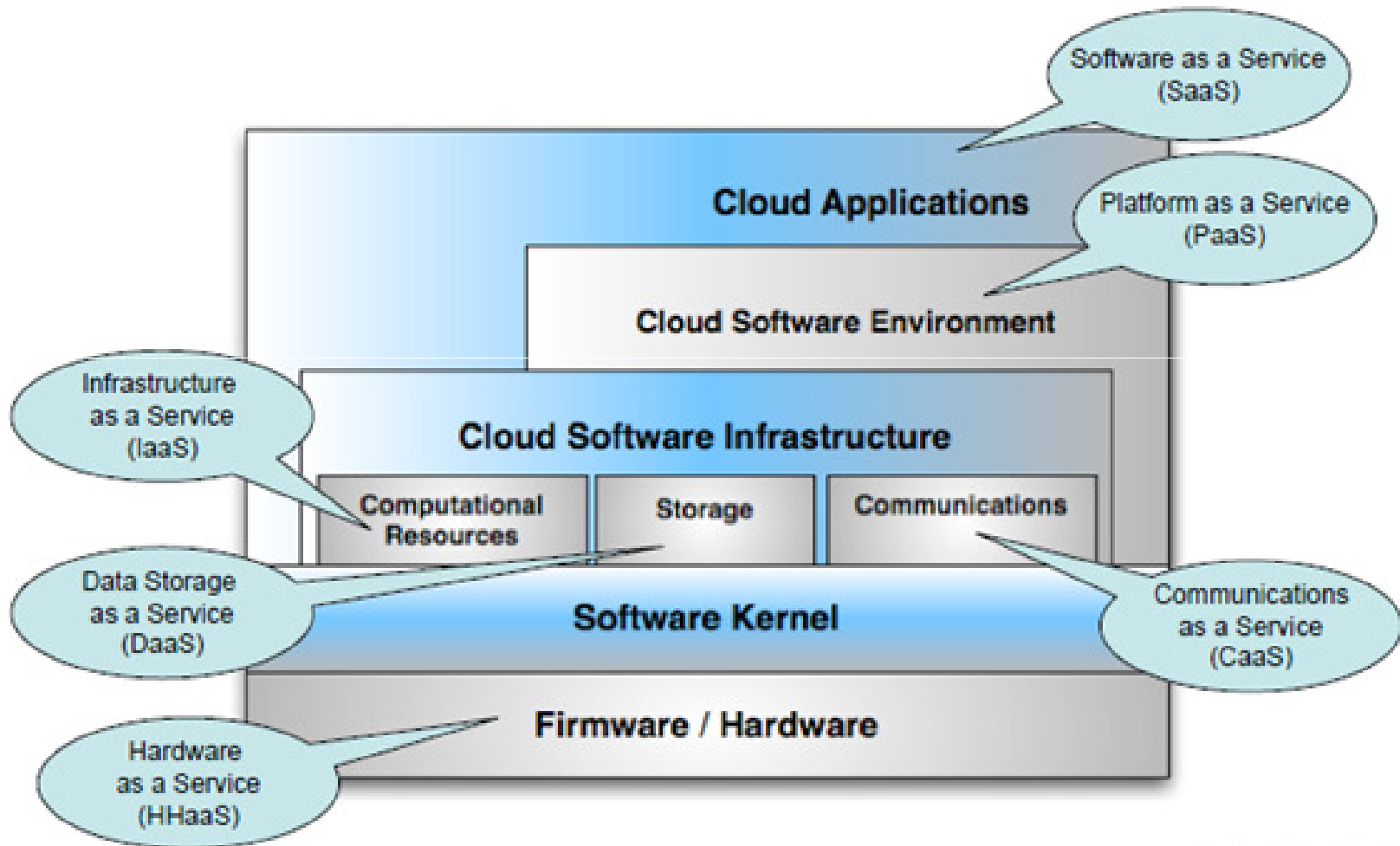
Let's Get In To The Cloud

TYPICAL SOLUTION STACK





Cloud Composition

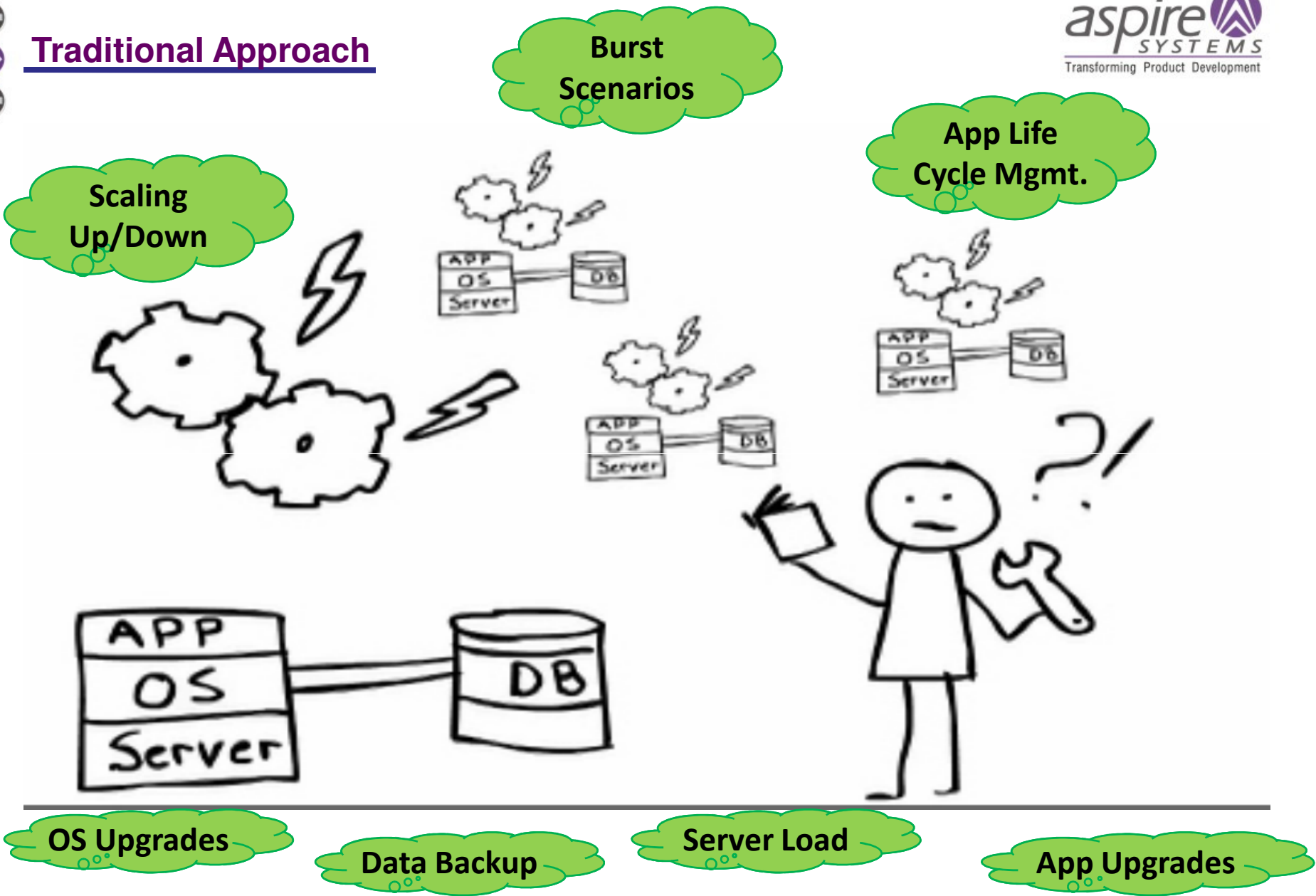




Azure Overview

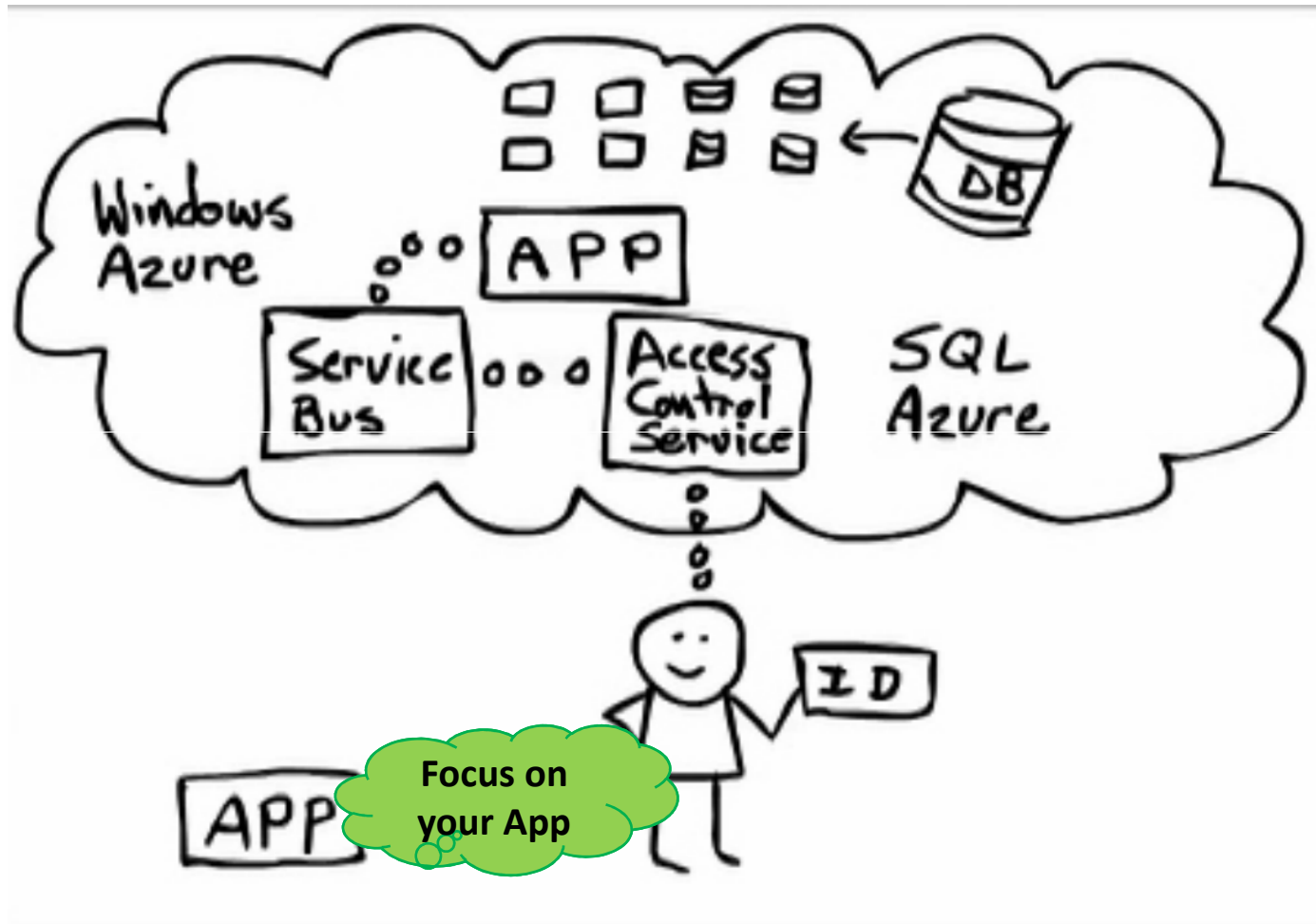


Traditional Approach





With Azure





Why Azure?

99.999 %

99.99 %
99 % 99.9 %
99.9999 %

Availability

- High level of availability
- Automatic Load Balance
- Disaster Recovery



Ease of use

- Based on standard MS Technologies - .NET, SQL Server, etc.
- Facilitates migrating existing apps/data
- Intuitive/User friendly portals
- Heavy weight operations through few clicks



Manageability

- Offload infrastructure responsibility
- Focus on coding rather than managing hardware



Why Azure?



Scalability

- At every level – compute, storage, content, services, etc.
- Scale up and down
- Auto Scaling Support



Cost Effective

- Op Ex vs. Cap Ex
- Pay as you go
- Pay per use



Global Support

- Flexibility in location (US, Europe, Asia)
- CDN (24 Locations)

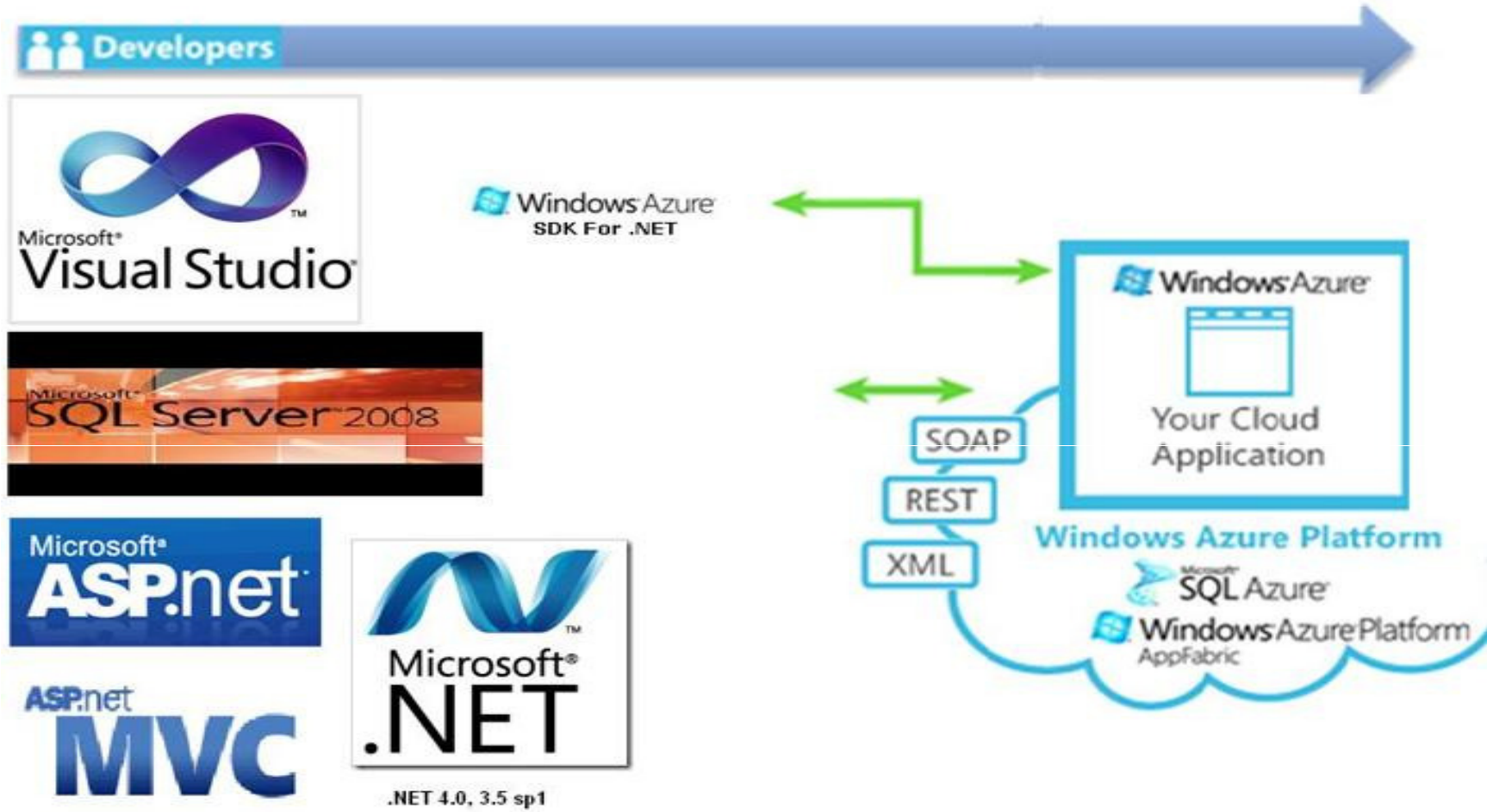


Application Life Cycle Management

- Deploy
- Upgrade
- Staging, production



Technology Support - Microsoft





Complete Technology Support

IDEs for Windows Azure

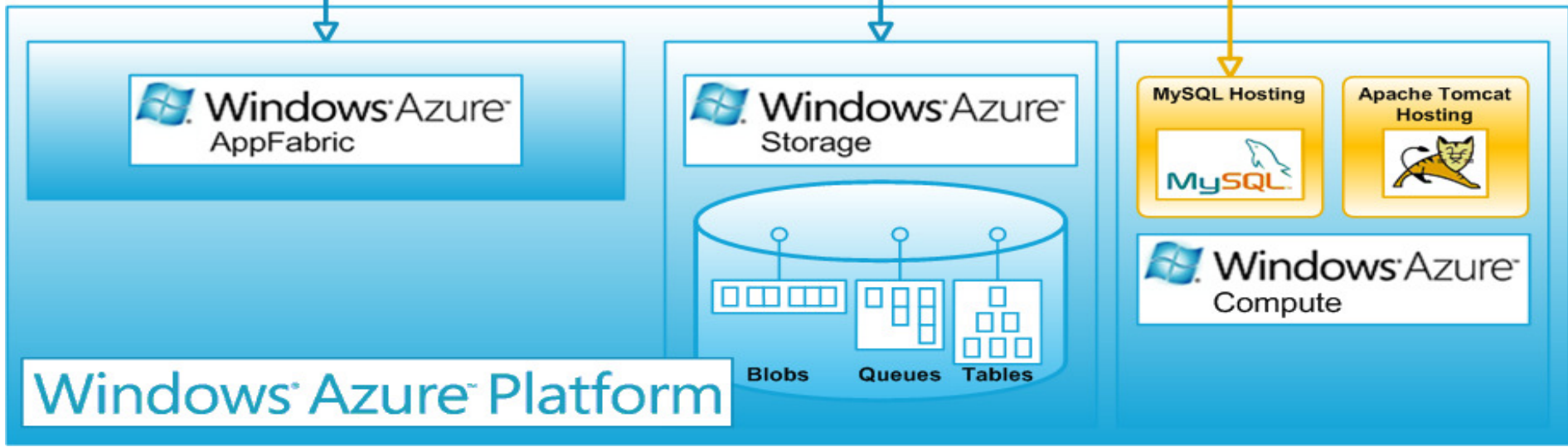
AppFabric SDKs for:

Windows Azure Storage SDKs for:

MySQL Drivers for:

REST

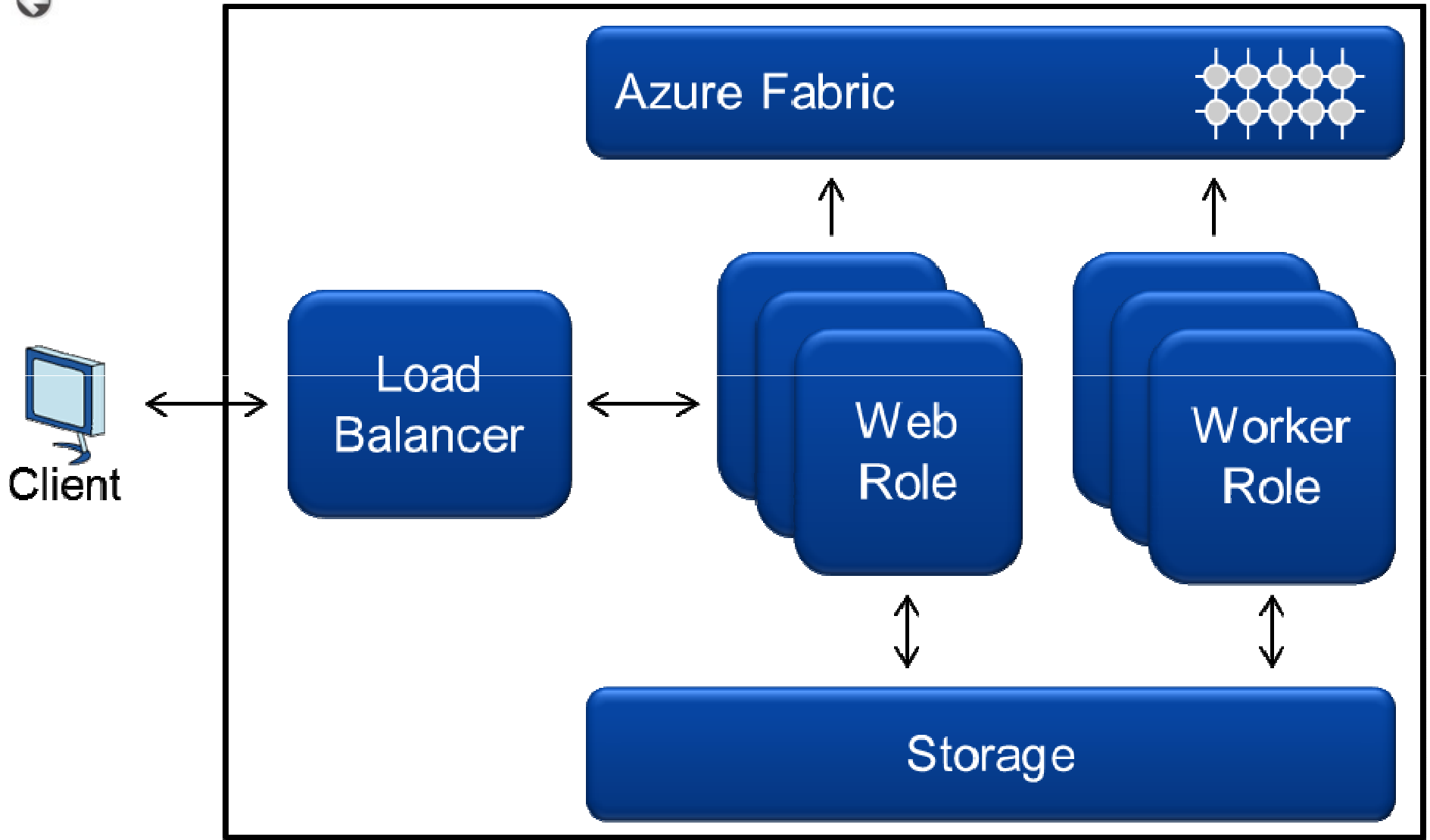
REST



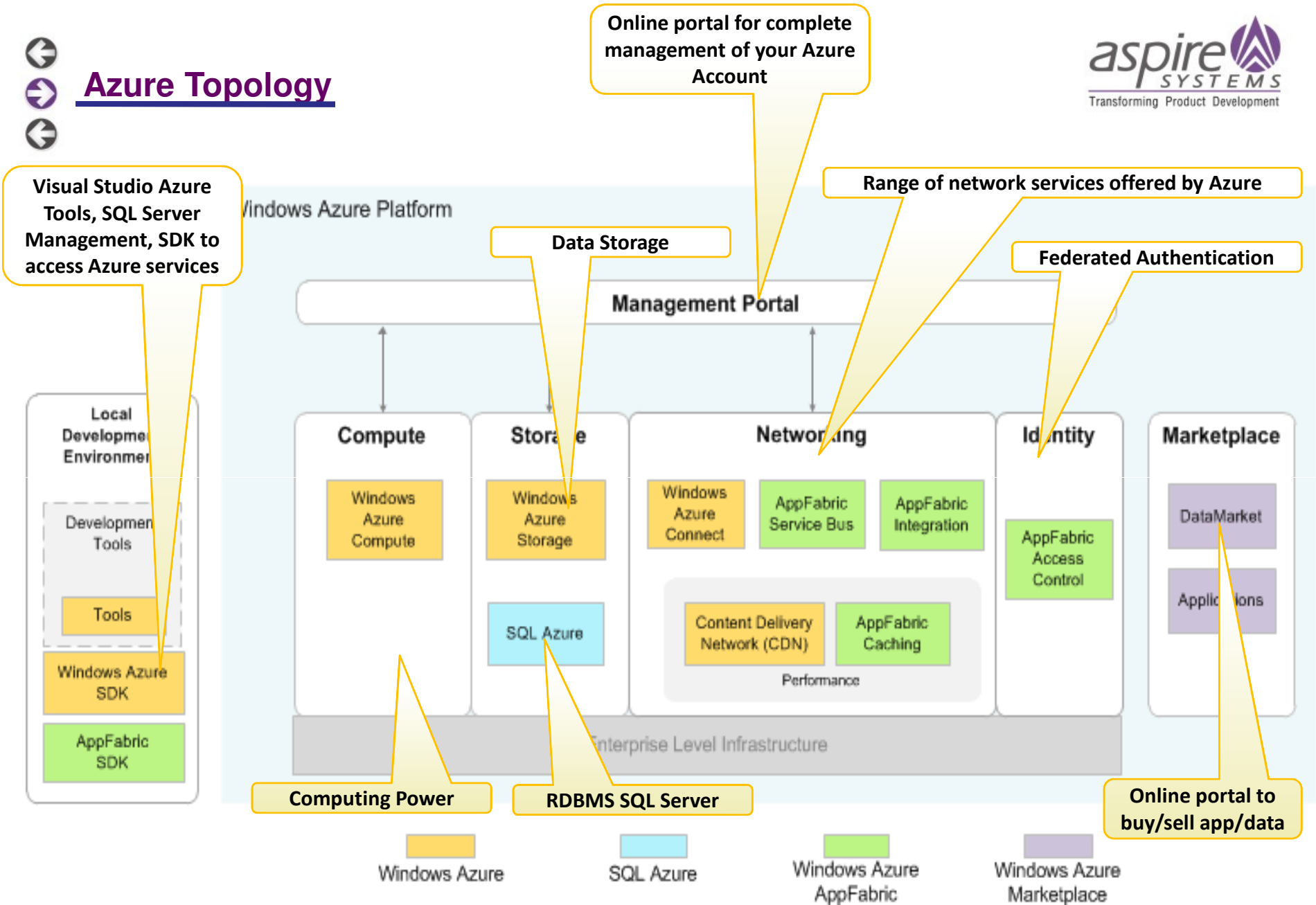
Windows Azure Platform



Azure – Simplified View

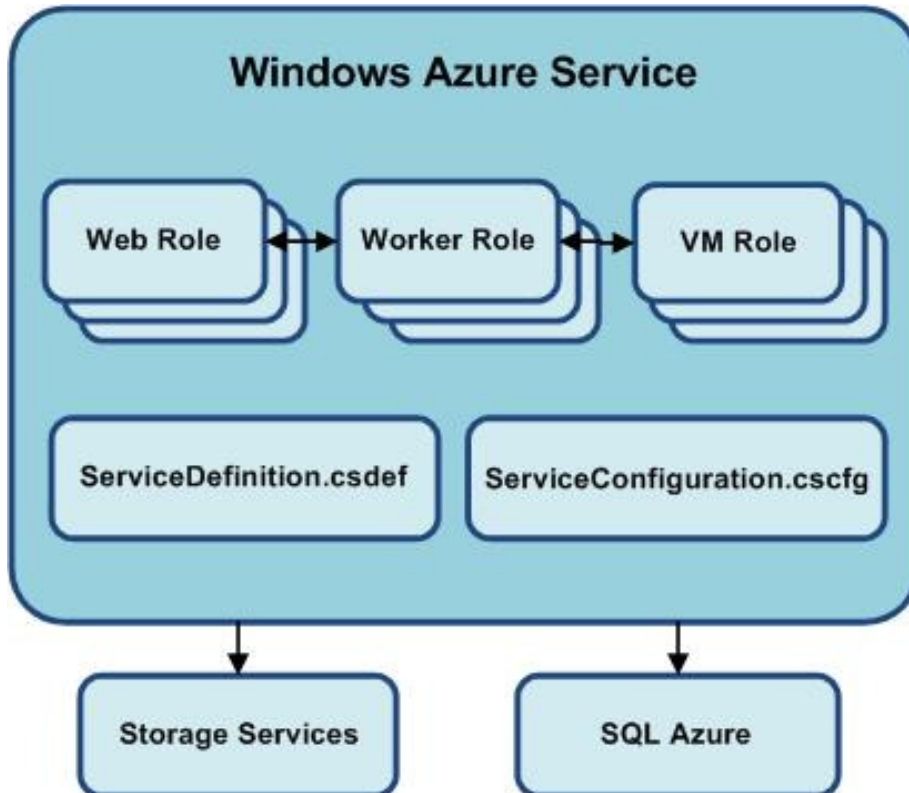


←
→ **Azure Topology**
←





Understanding Azure Roles



- ❖ Web Role
 - ❖ For Web Applications
 - ❖ Comes with IIS setup
 - ❖ Not suited for long running processes
 - ❖ Typically one per application
- ❖ Worker Role
 - ❖ Pure computing power
 - ❖ Apt for Background processing
 - ❖ One Web Role can have zero or many Worker roles.
- ❖ VM Role
 - ❖ Actual Virtual Machine
 - ❖ Gives full control of operations
 - ❖ Acts as IaaS
 - ❖ Useful for legacy apps



Instance Sizes

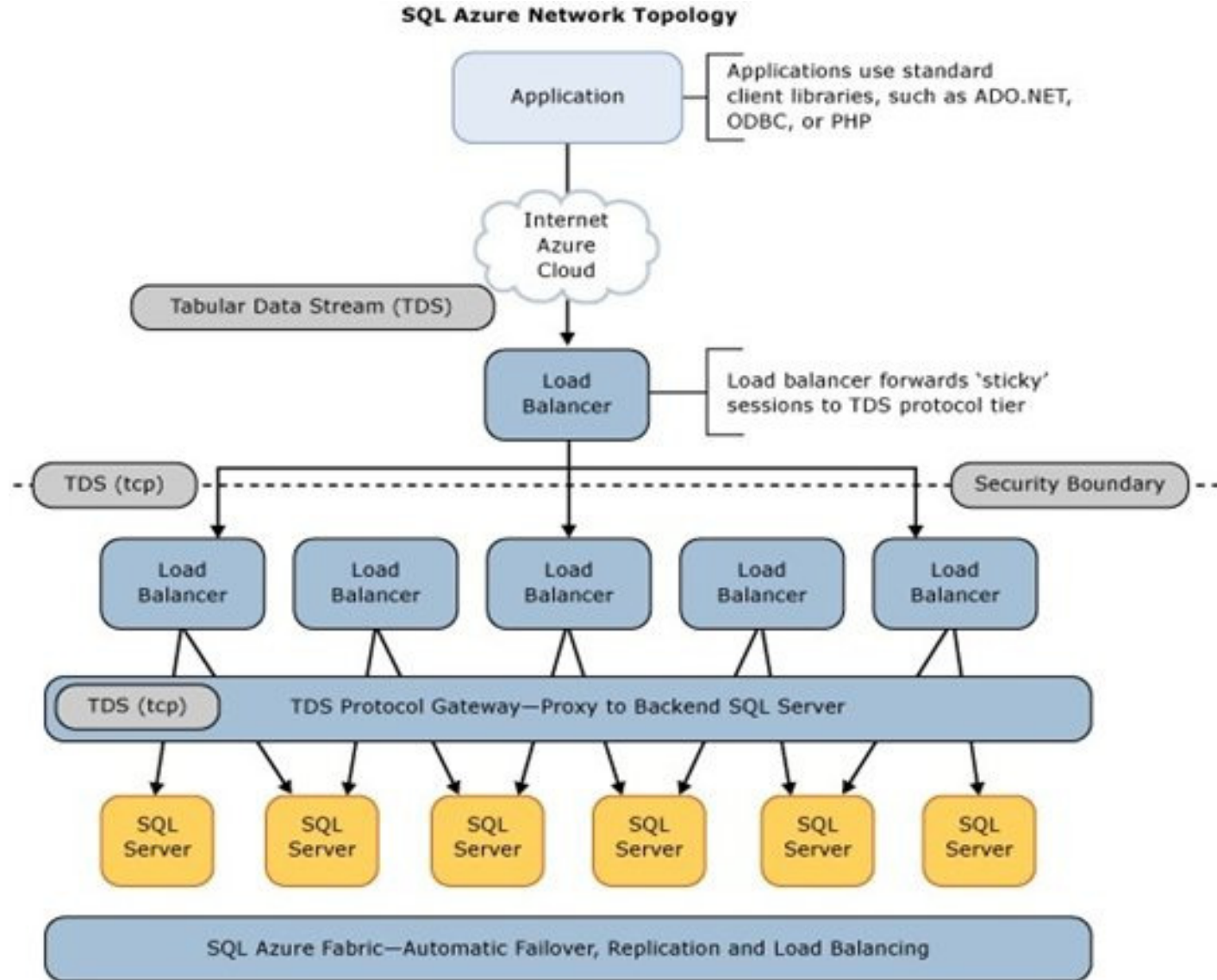
Compute Instance Size	CPU	Memory	Instance Storage
Extra Small	1.0 GHz	768 MB	20 GB
Small	1.6 GHz	1.75 GB	225 GB
Medium	2 x 1.6 GHz	3.5 GB	490 GB
Large	4 x 1.6 GHz	7 GB	1,000 GB
Extra Large	8 x 1.6 GHz	14 GB	2,040 GB



Data Storage – SQL Azure



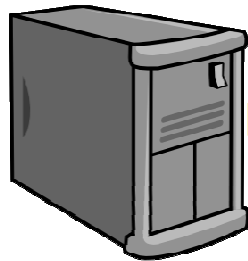
SQL Azure Topology





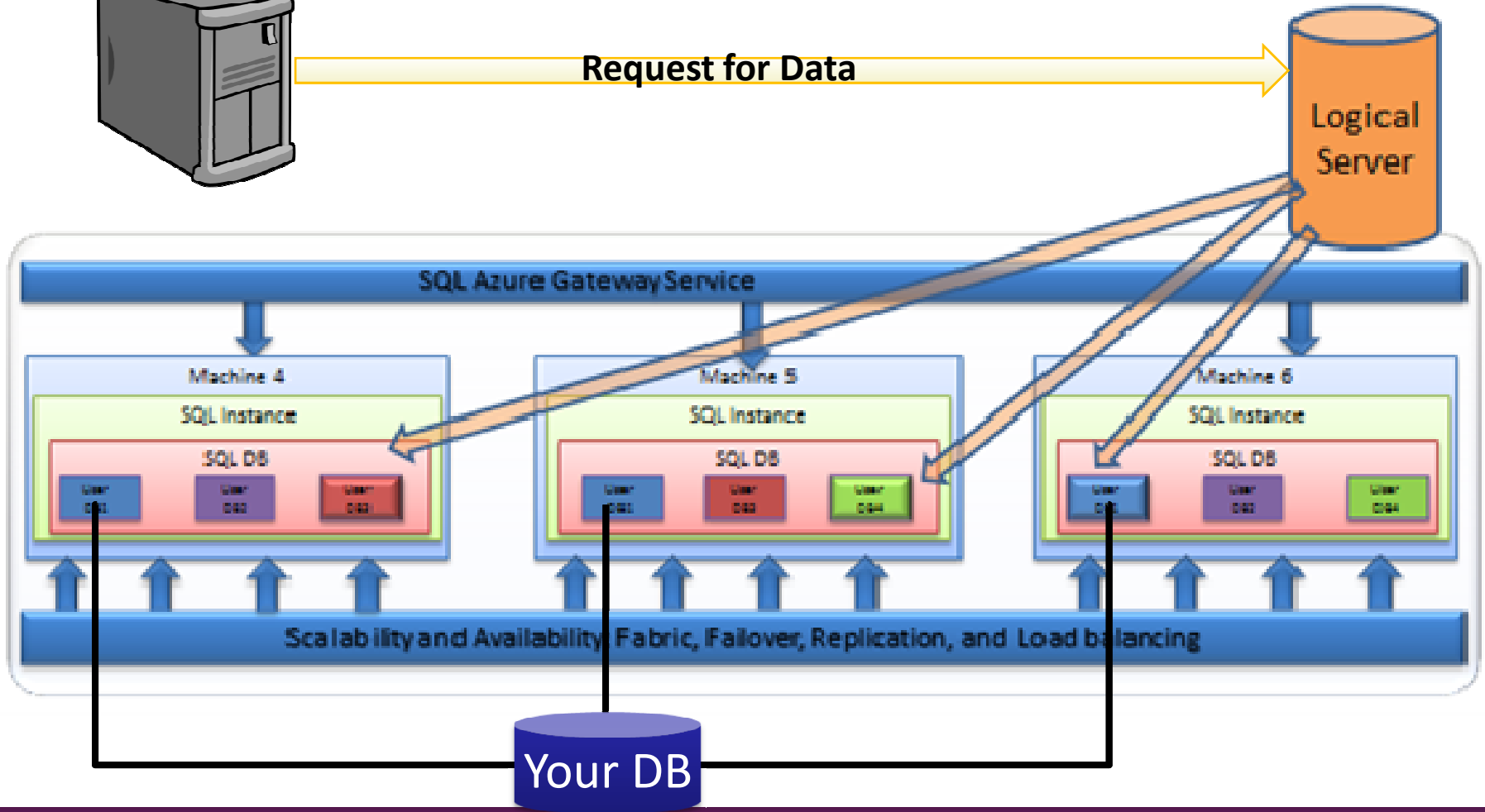
SQL Azure Architecture

Client Machine



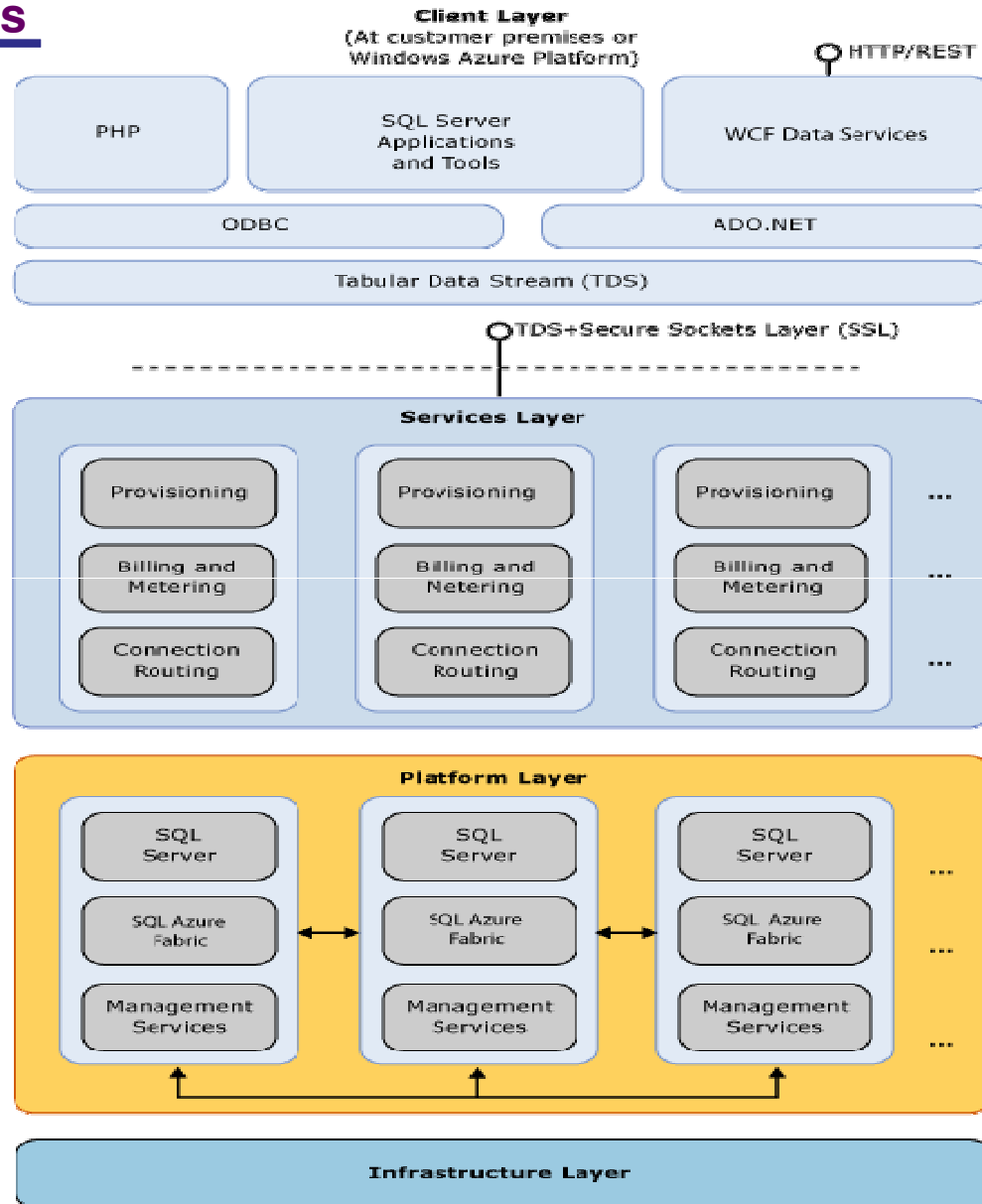
Request for Data

Logical Server





SQL Azure Layers





Quick Comparison

Feature	SQL Server	SQL Azure
Data Storage	No Limit	Web Edition – 5 GB Business Edition – 50 GB
Connectivity	SQL Server Management Studio – All versions	SQL Server Management Studio - SQL Server 2008 R2/Express, Database Manager
Authentication	SQL and Windows	Only SQL
Schema	No Limitation	No Heaps Support Must have clustered index
TSQL Support	No Limitation	Mixed Support
Transactional Replication	Supported	Not Supported
SQL Agent/ Jobs	Supported	Not Supported
Running SSIS	Supported	Not Supported



SQL Azure – Upcoming Features

- ❖ SQL Azure Reporting (CTP)
 - ❖ Use your standard tools – BIDS
 - ❖ Publish the reports in SQL Azure Reporting server
 - ❖ Reports accessed via management portal or application

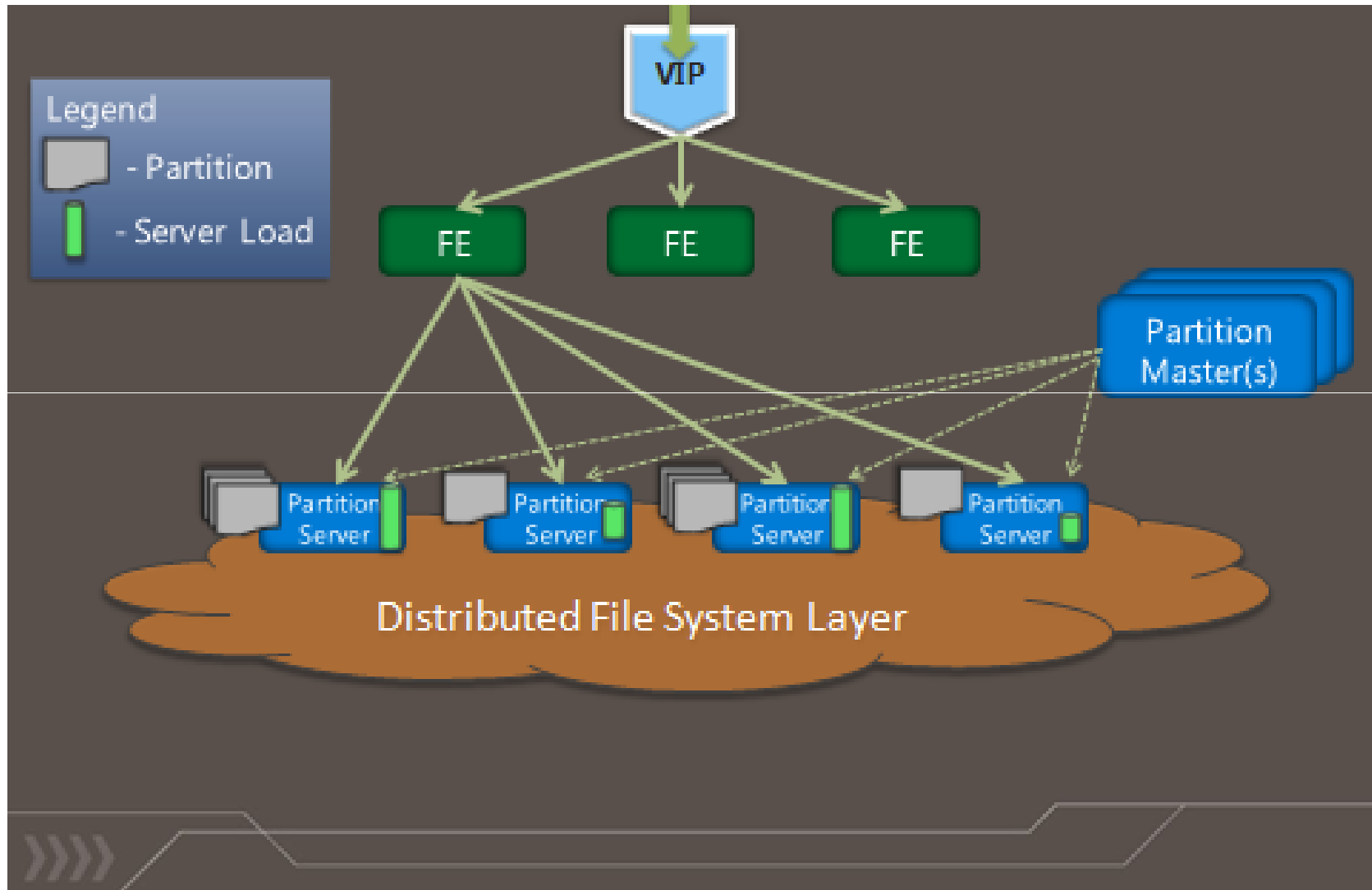
- ❖ Data Sync (CTP)
 - ❖ Built on MS Sync Framework
 - ❖ Bi-directional data synchronization
 - ❖ Supports both sharing between multiple SQL Azure DB and between on-premise and SQL Azure DB



Data Storage – Azure Storage

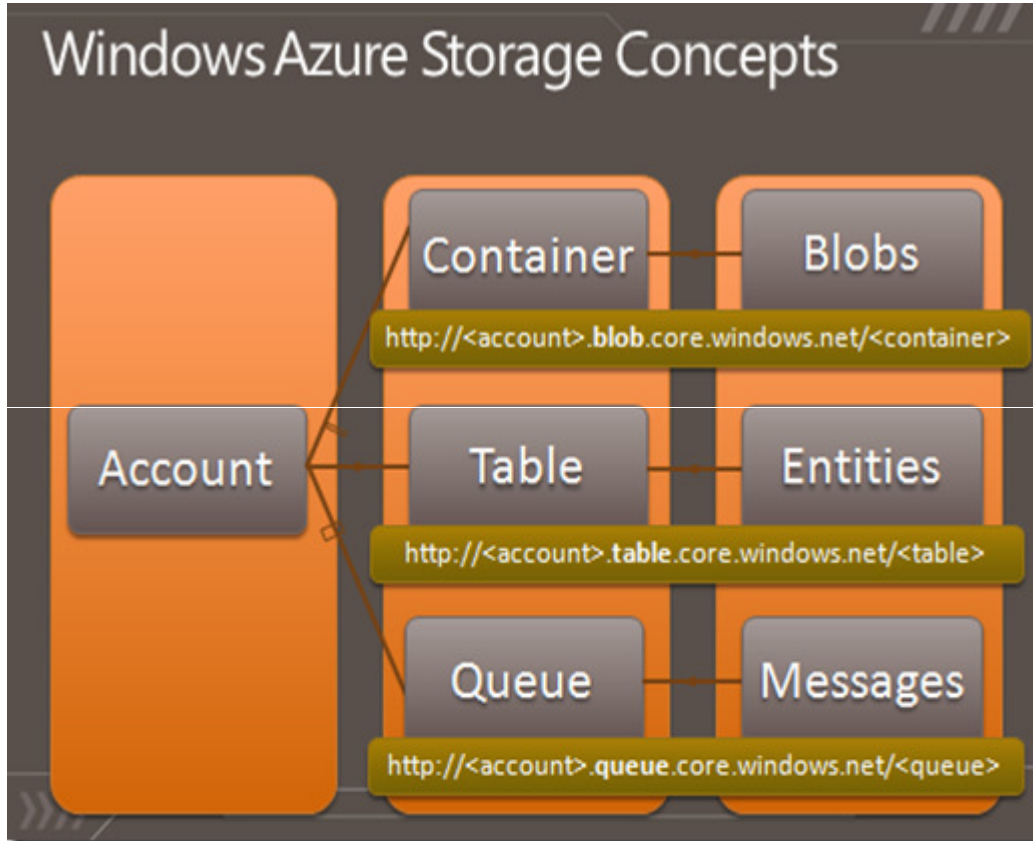


Azure Storage Architecture





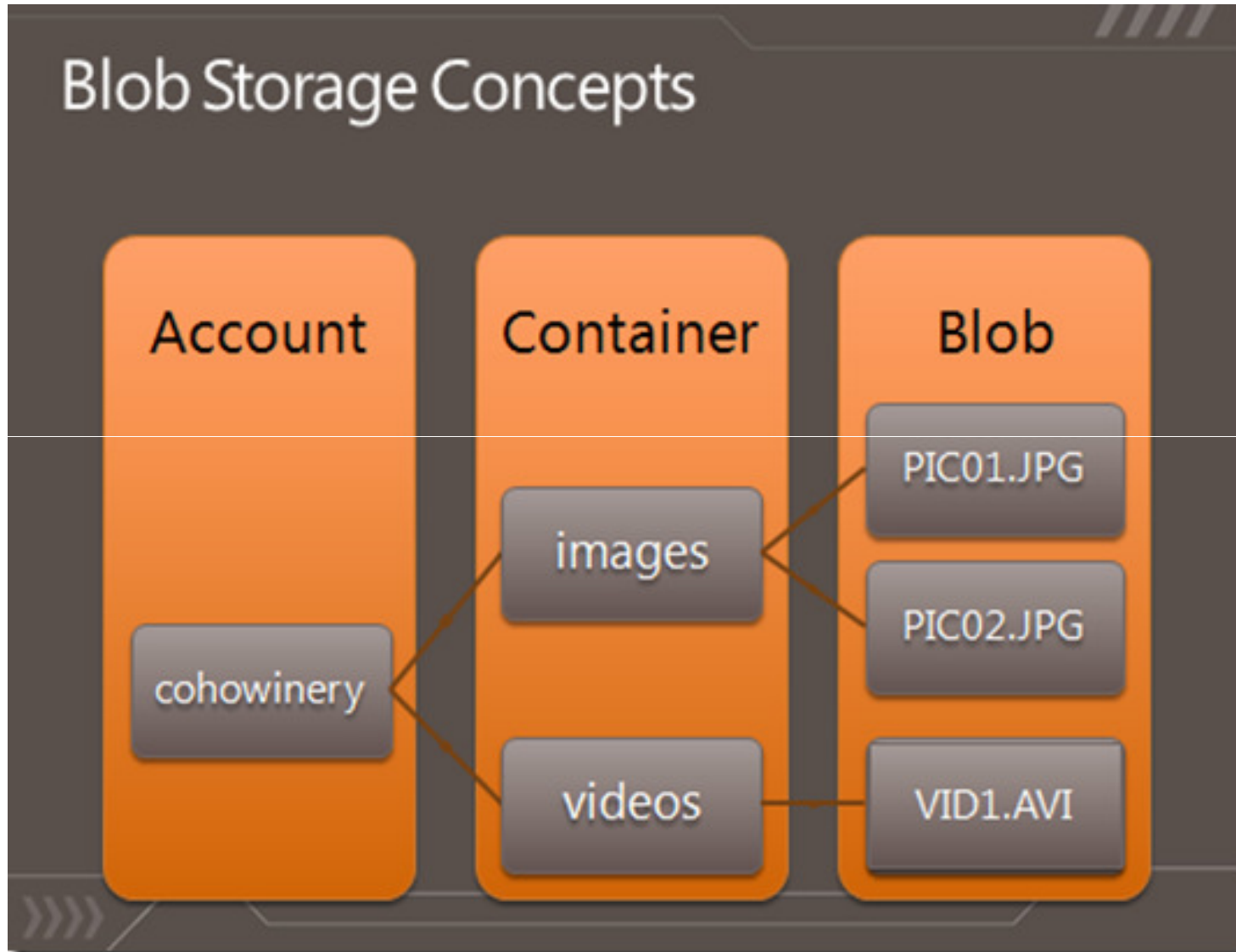
Azure Storage Types



- ❖ Capacity – Up to 100 TBs
- ❖ Transactions – Up to 5,000 entities/messages/ blobs per second
- ❖ Bandwidth – Up to 3 gigabits per second

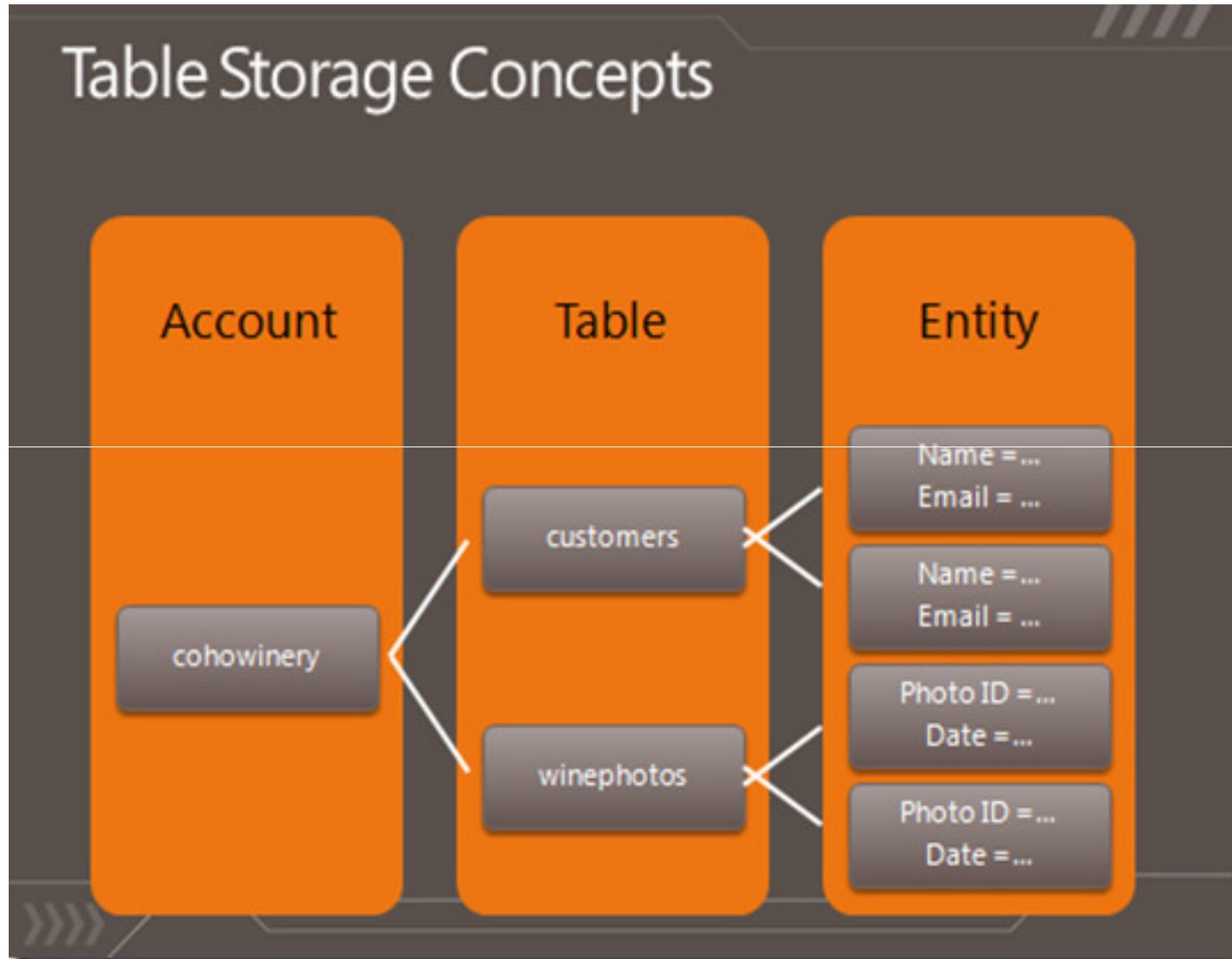


Azure Storage Types



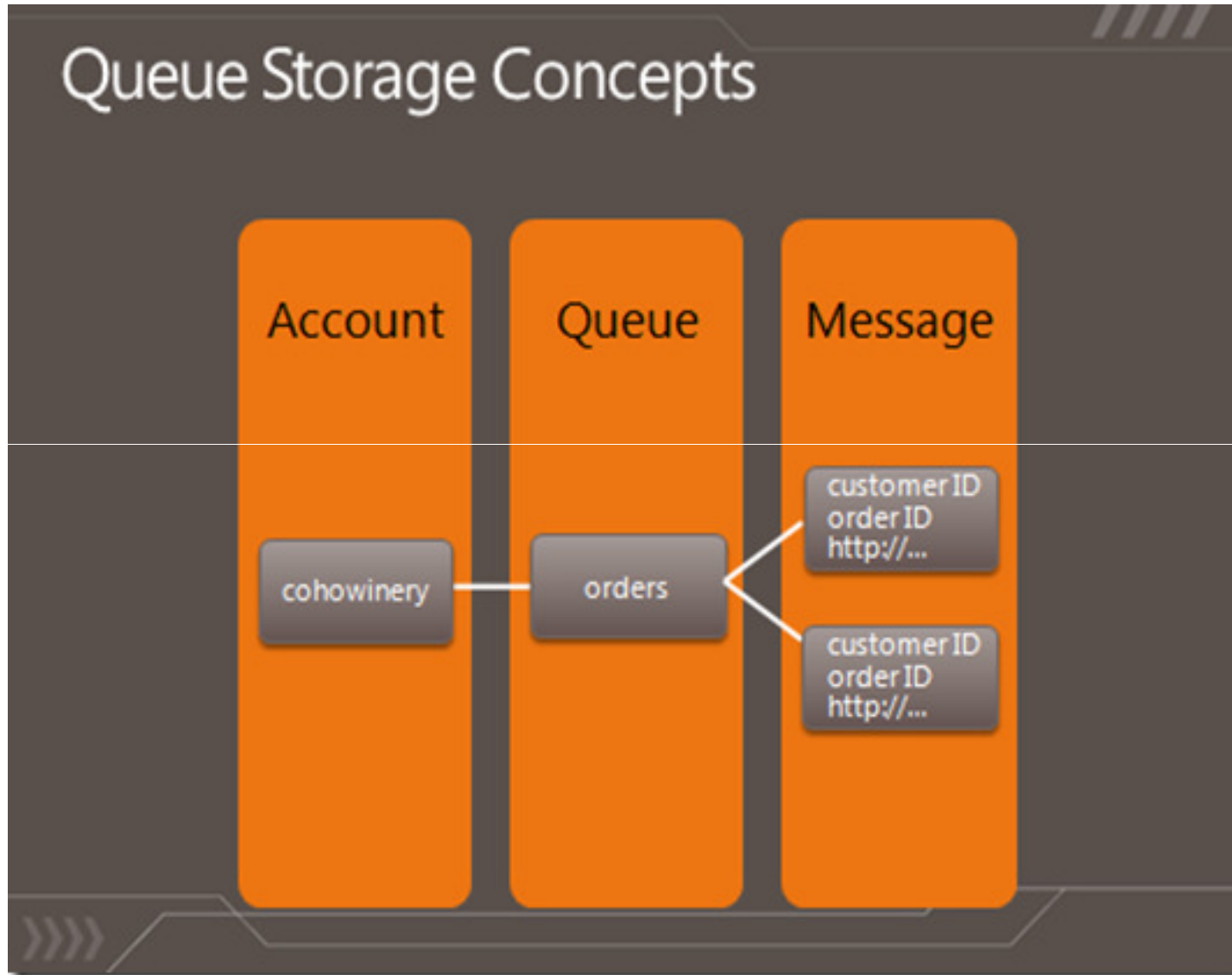


Azure Storage Types





Azure Storage Types





Data Storage Comparison



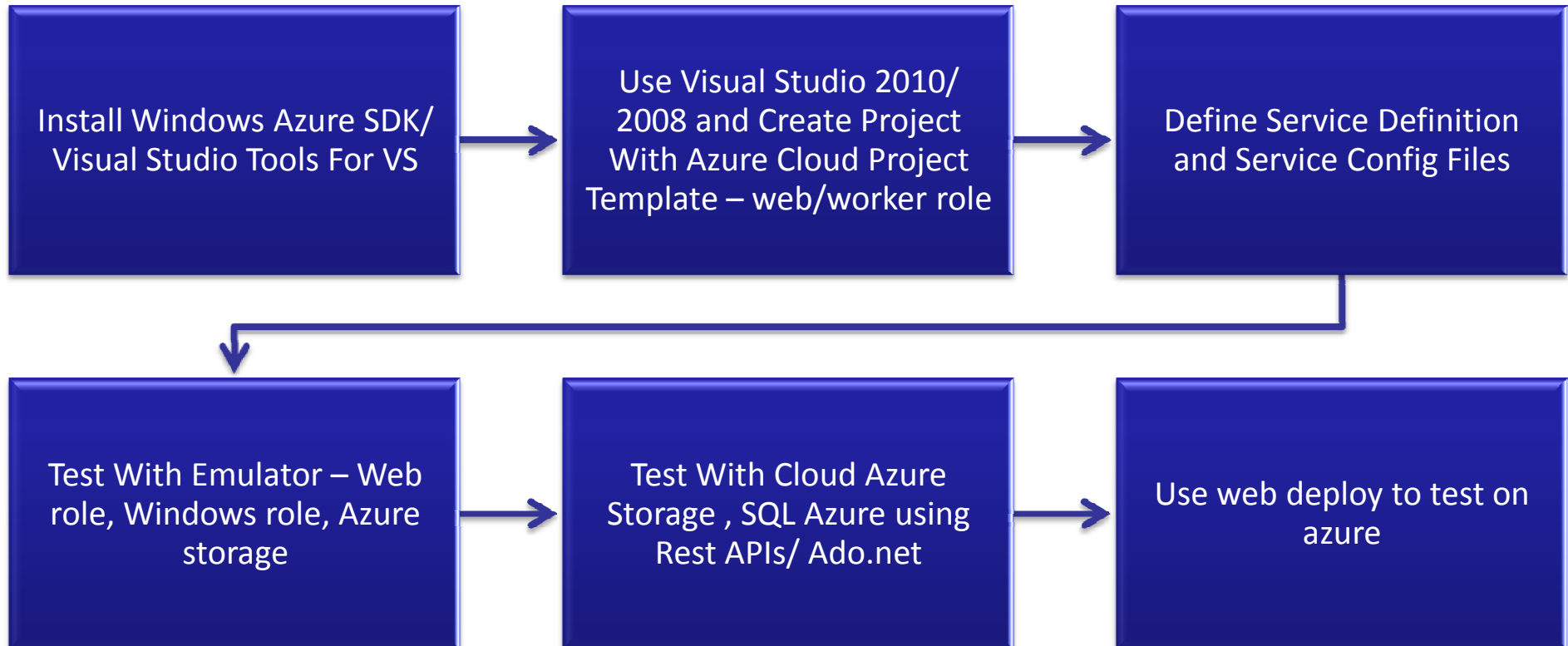
Standard RDBMS	No SQL DB
All datatypes supported	Blob, Tables & Queues
Accessed through regular SQL Server Tools	REST APIs
Max 50 GB	Max100 TB
Scalable with right (app) design	High levels of scalability
Full Portability	Less Portability
Transactions similar to SQL Server (within a given database)	Limited transaction support
Supports Reporting Service	No Reporting service
Charges based on chunks (in 10 GB)	Granular level of usage/pay (1 GB)

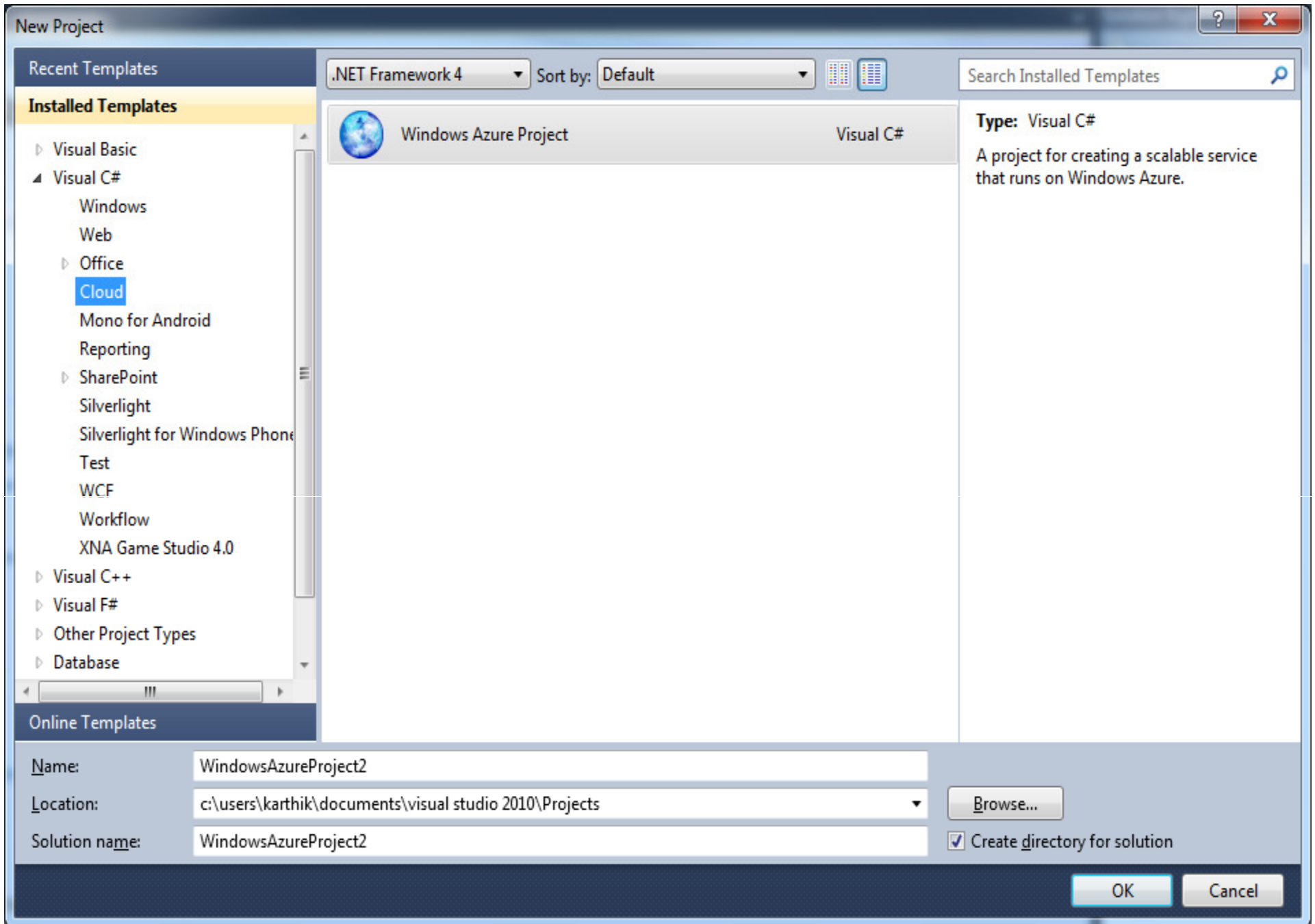


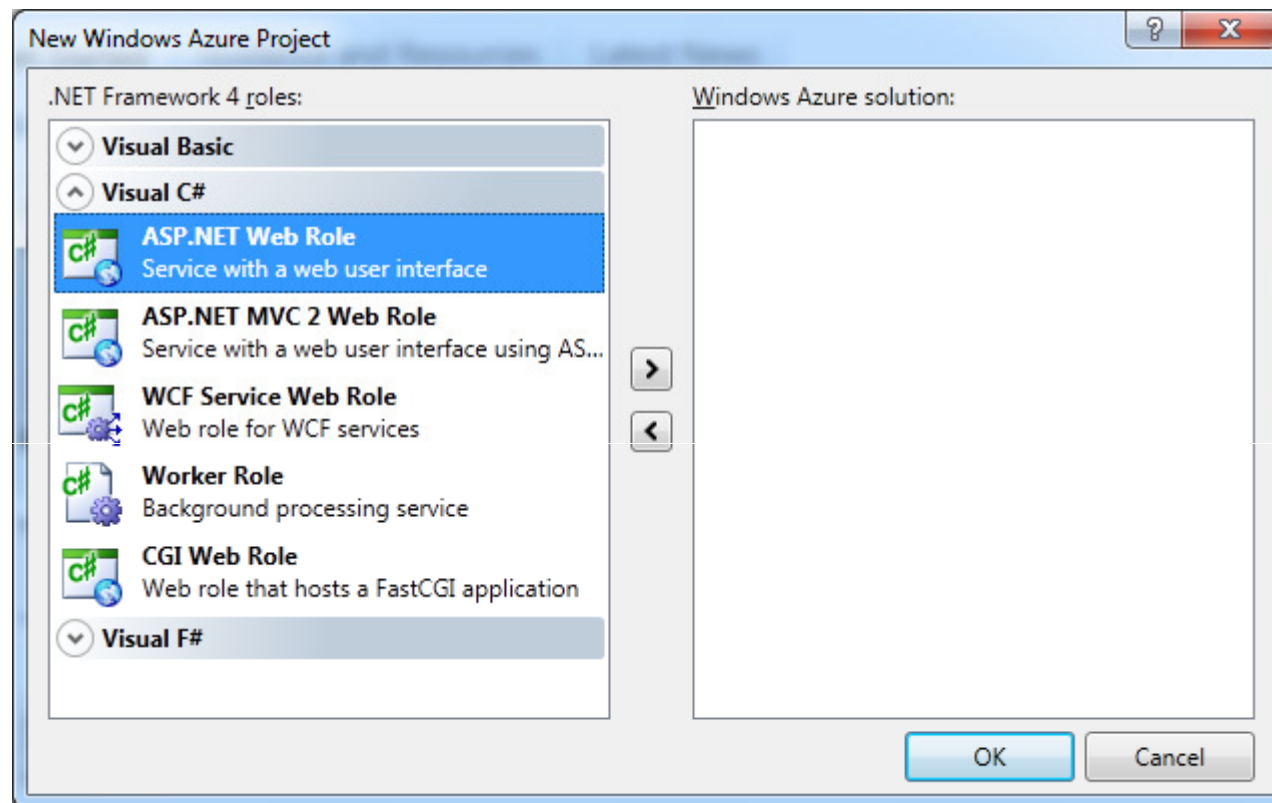
Developing, Hosting and Managing an Application in Azure

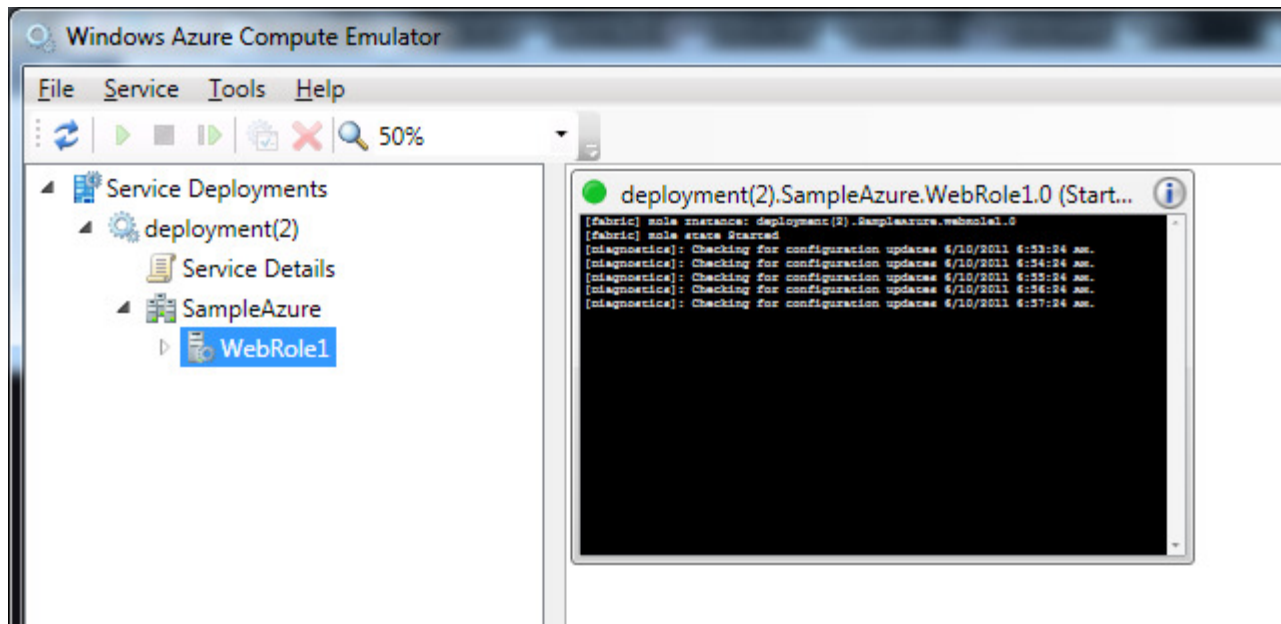
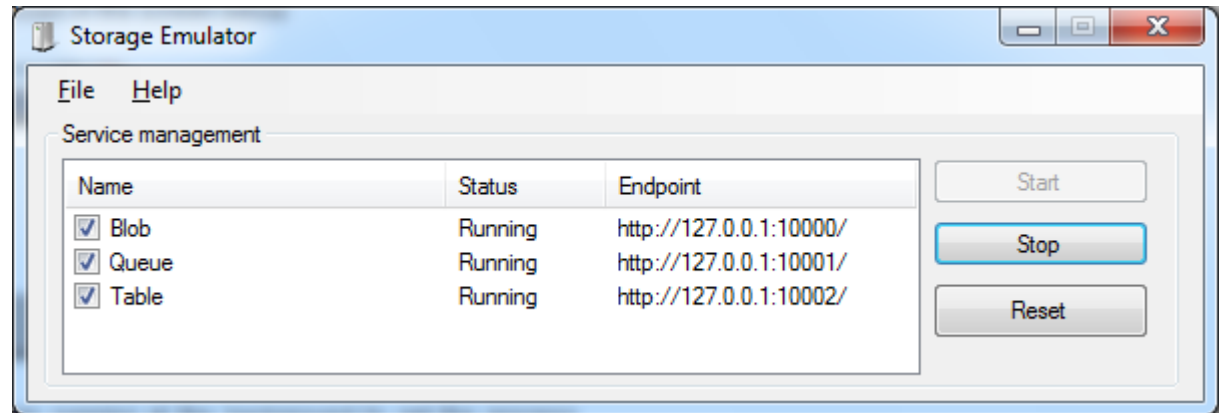
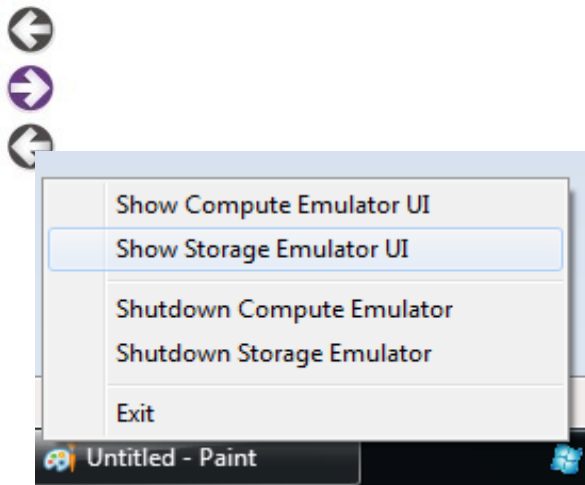


Development Steps









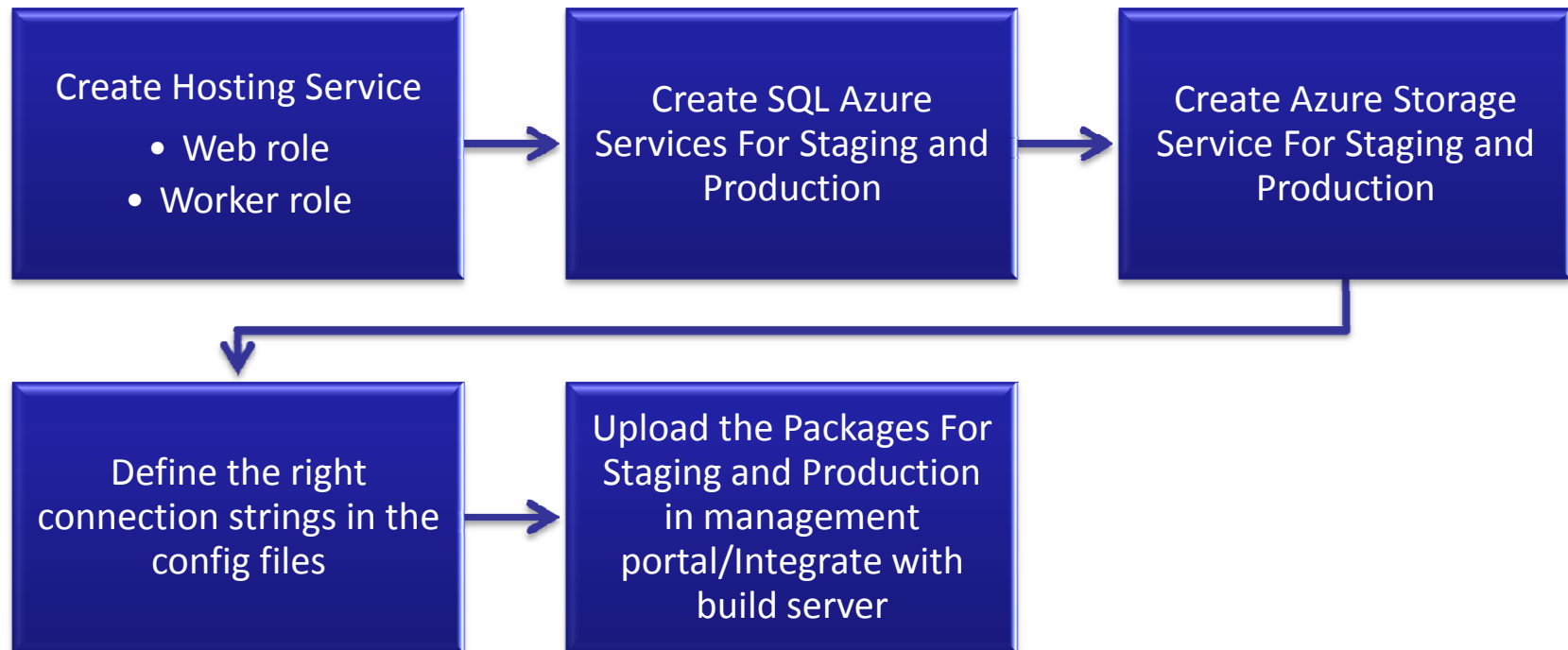


Design and Development Considerations

- ❖ Need for hybrid support (both on-premise and cloud)
 - ❖ Adopt a provider model for cloud dependencies and have implementations on premise and cloud
- ❖ Access to file systems
 - ❖ Use blobs
- ❖ Configuration level changes to app.config, web.config
 - ❖ Go for an abstraction of configuration and manage the configuration in your application using storage
- ❖ Have a reasonable retry policy for data access
- ❖ Minimize your transactions for azure storage, watch the transaction charges
- ❖ Bring only the required data – watch for bandwidth charges
- ❖ For SQL Azure use Partitioning – Limit for size
- ❖ Go stateless or store it in distributed cache or data storage
- ❖ Authentication – Single sign on
- ❖ Law compliance for data store



Deployment Steps





Windows Azure Platform

Management Portal – Windows Azure PL...

https://windows.azure.com/default.aspx

Windows Azure Platform

Billing | karthik a | Sign Out

Create a New Hosted Service

Choose a subscription

Enter a name for your service

FSDebug

Enter a URL prefix for your service

FSdebug .cloudapp.net

Choose a region or affinity group

Anywhere US Create or choose an affinity group

Deployment options

Deploy to stage environment

Deploy to production environment

Do not deploy

Start after successful deployment

Deployment name

FSdebug

Package location

SampleAzure.cspkg

Configuration file

ServiceConfiguration.cscfg

Properties

Account administrator

azpass68@microsoft.com

Created

5/23/2011 8:45:52 PM UTC

Name

Azdem68L24386Z

Quota

Cores: 0 / 20

Hosted Services: 0 / 6

Storage: 0 / 5

Status

Active

Service administrator

karthik_anbu@hotmail.com

Subscription ID

36708497-e87a-4ccf-b55d-59b48057e297

Type

Subscription

Data refresh paused

Take me back to the old portal

© 2010 Microsoft Corporation Privacy Statement Terms of Use

Help and Support

Feedback



New Hosted Service | New Production Deployment | New Staging Deployment | Upgrade | Configure | Delete | Start | Stop | Swap VIP | Configure OS | Reboot | Reimage | Enable | Configure | Connect

Deployment Health | Affinity Groups | Management Certificates | Hosted Services | Storage Accounts | User Management | VM Images

Name	Type	Status	Environment
Subscription	Subscription	Active	
F5Debug	Hosted Service	Created	
Certificates			
F5debug	Deployment	Ready	Production
WebRole1	Role	Ready	Production
WebRole1_IN_Instance		Ready	Production

Properties

Created: 6/10/2011 1:57:56 AM UTC

Cores used: 1

URL: <http://f5debug.cloudapp.net>

Environment: Production

ID: [Redacted]

Input endpoints: [Redacted]

Last operation: Status: Succeeded
Last operation: Create deployment
Time started: 6/10/2011 1:57:55 AM UTC
Time completed: 6/10/2011 1:58:48 AM UTC
Duration: 0:00:53.114

Last refreshed: 6/10/2011 2:06:49 AM UTC



Upgrades

- ❖ In place Upgrade
 - ❖ Upgrade Domain
 - ❖ Individual Role Upgrades
 - ❖ Limitation

- ❖ Swap VIP
 - ❖ VIP interchange between staging and production
 - ❖ Recommended for huge change
 - ❖ Number of Instances

- ❖ Considerations
 - ❖ Data Storage/Queue/Files and Blobs
 - ❖ Cache
 - ❖ Form authentication encryption



Backup & Auto Scaling

- ❖ Backup
 - ❖ Auto replicated for high availability
 - ❖ Backup strategy required for the following cases
 - ❖ Loss due to application/manual errors
 - ❖ Point in time backup to restore not supported directly

- ❖ Auto Scaling
 - ❖ Not supported by Azure directly
 - ❖ Enterprise Library – Auto Scale Block
 - ❖ Own Solution – Using diagnostic information, rule based scaling



Azure Costing

- ❖ Windows Azure is billed on utilization,
 - ❖ Compute Instances
 - ❖ Storage
 - ❖ Storage Transactions
 - ❖ Content Delivery Network transfers
 - ❖ Data Transfers in and out of the datacenter
 - ❖ SQL Azure database
 - ❖ AppFabric Access Control transactions



Other Azure Services

❖ App Fabric Caching

- ❖ Distributed Caching
- ❖ Used To Maintain State In a Load Balanced Environment

❖ Access Control Service

- ❖ Identity Federation
- ❖ SSO with onpremise APIs

❖ Service Bus

- ❖ Enables distributed application
- ❖ Supports two way communication

❖ Azure Connect

- ❖ Connectivity with on-premise domain
- ❖ Facilitates remote administration

❖ CDN

- ❖ Static contents kept closer to end users
- ❖ Streaming Capability



Summary

- ❖ Powerful platform offering high levels of infrastructure and application management support
- ❖ Users should be smart enough pick the services that will be most effective and cost efficient
- ❖ Rapidly transforming by the day. Stay on with the updates.