Cloud Computing with Windows Azure

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why?

cheaper.
risk mitigation.
agility.

what?

elastic compute.
scalable storage.
network topology.

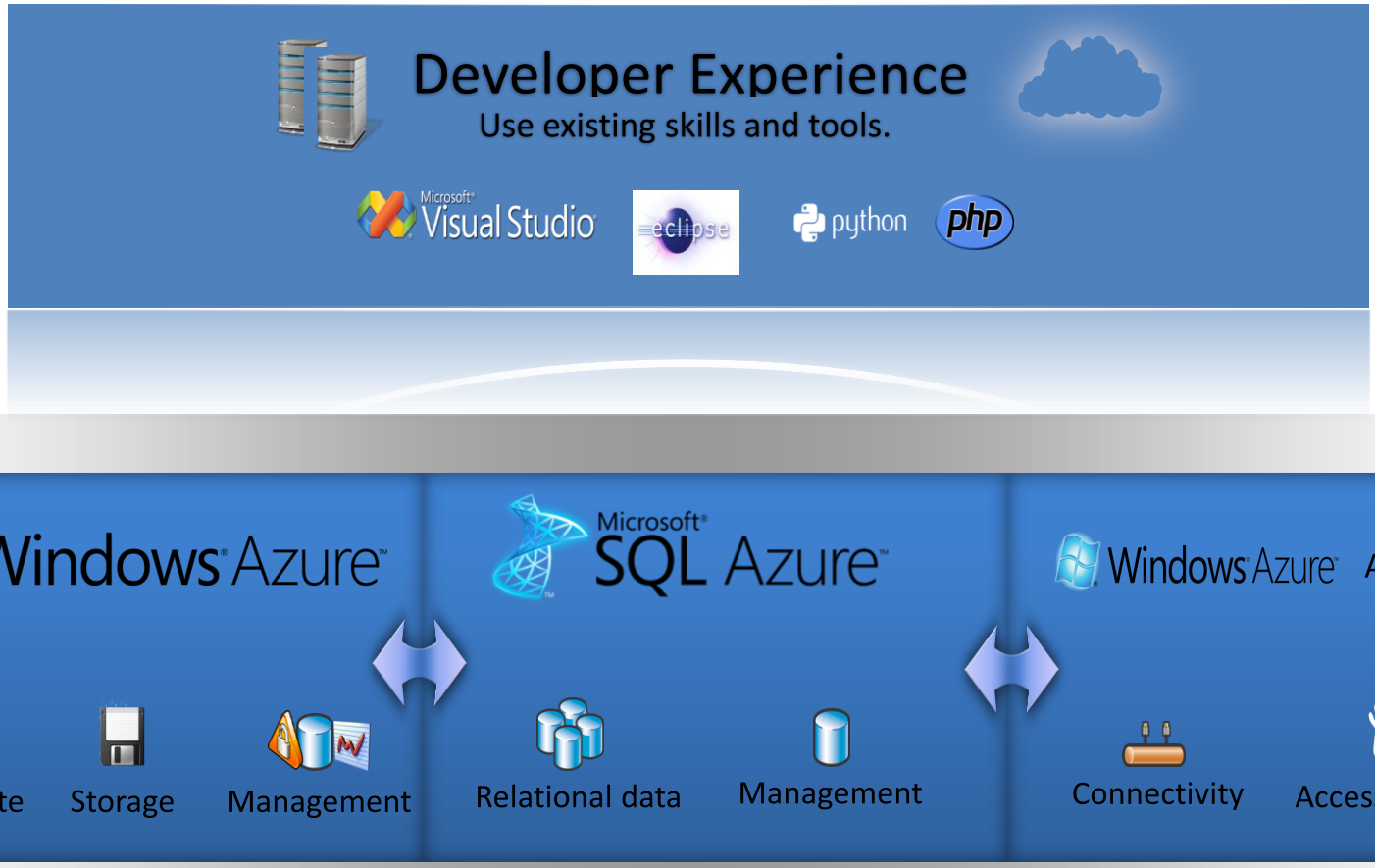
how?

self service.

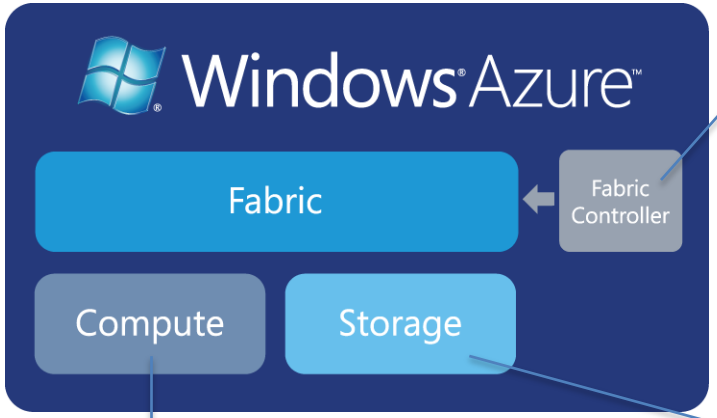
pay as you go.

cloud managed.

windows azure



architecture



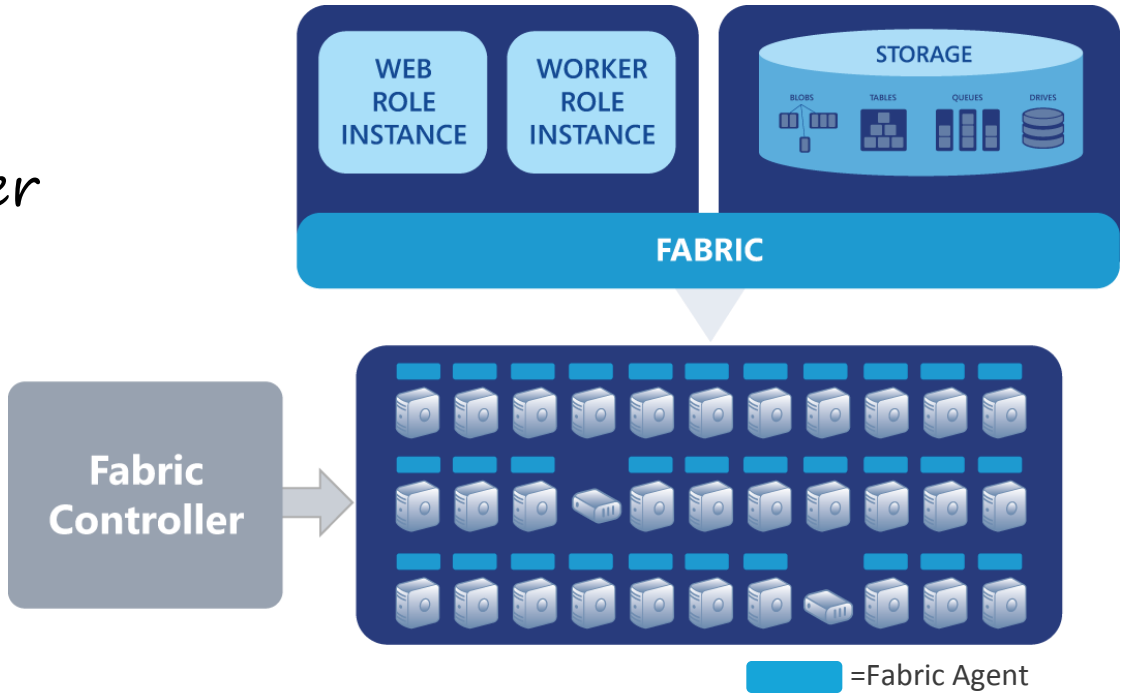
Service Management
.manages the Windows Azure OS
.monitors every application
.optimizes hardware utilization.

Storage Services
.store large amounts of data
.in any format

Virtualized Computation
.provides application scalability
.instances can be replicated as needed

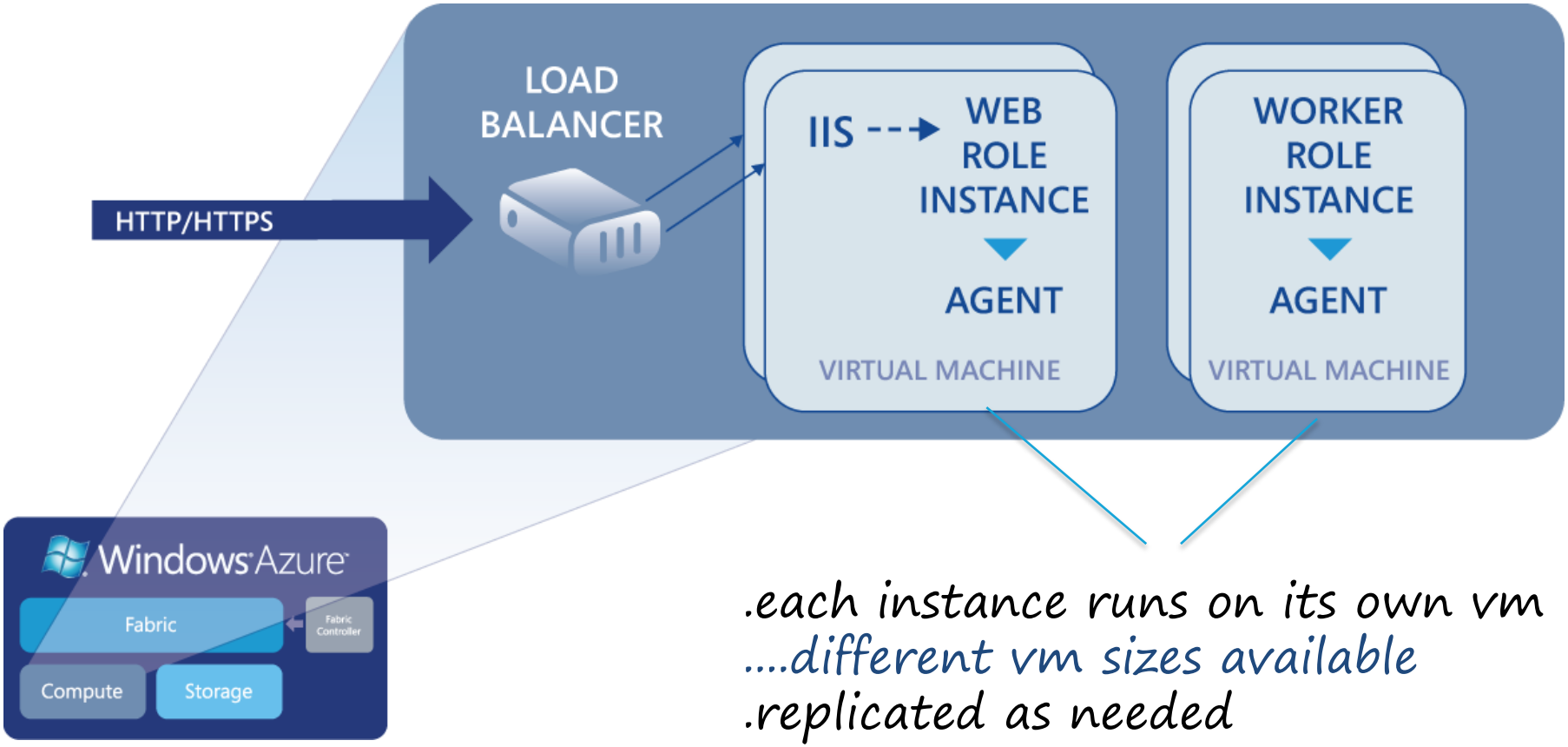
fabric

Fabric
.collection of servers
.multiple VMs per server
.different VM sizes



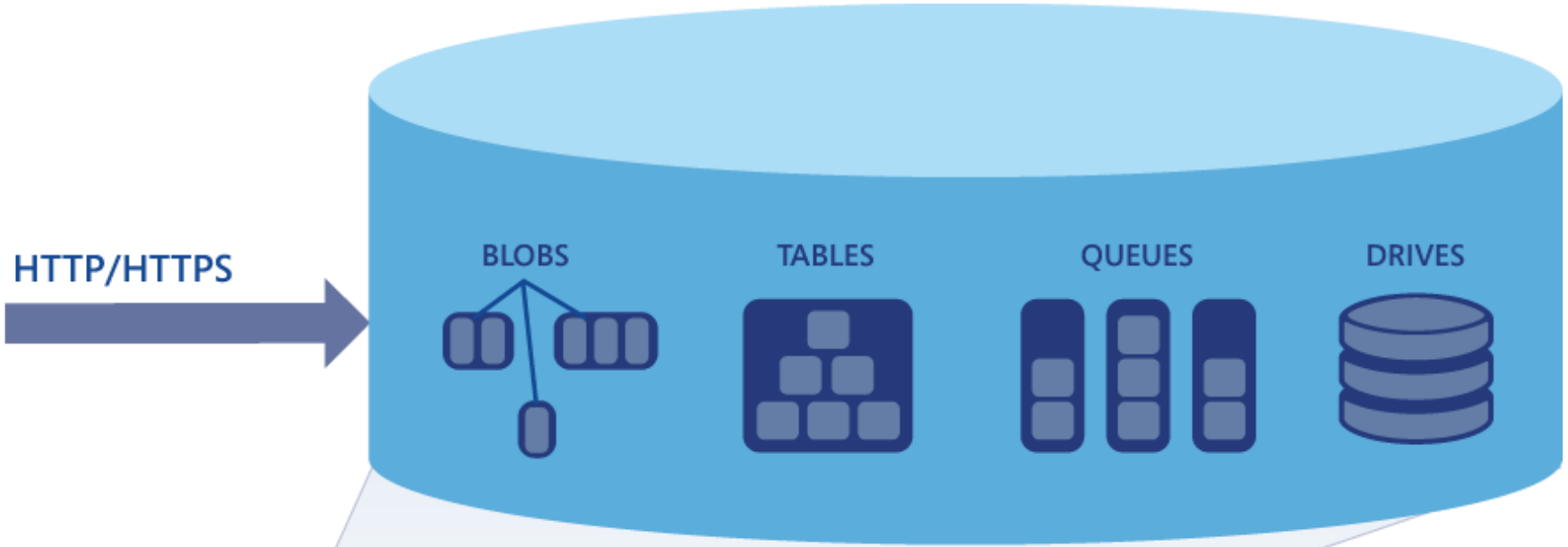
Fabric controller
.interacts with a "Fabric Agent" on each machine
.monitors every VM, application and instance
.performs load balancing, check pointing and recovery

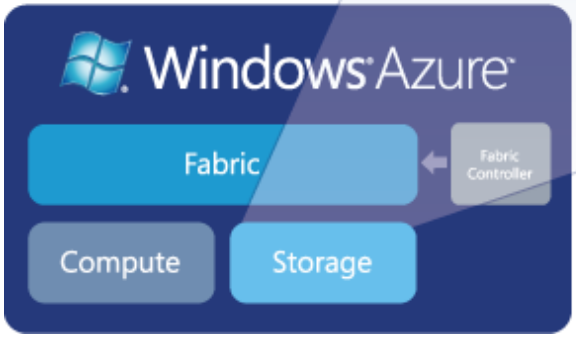
compute



.each instance runs on its own vm
....different vm sizes available
.replicated as needed

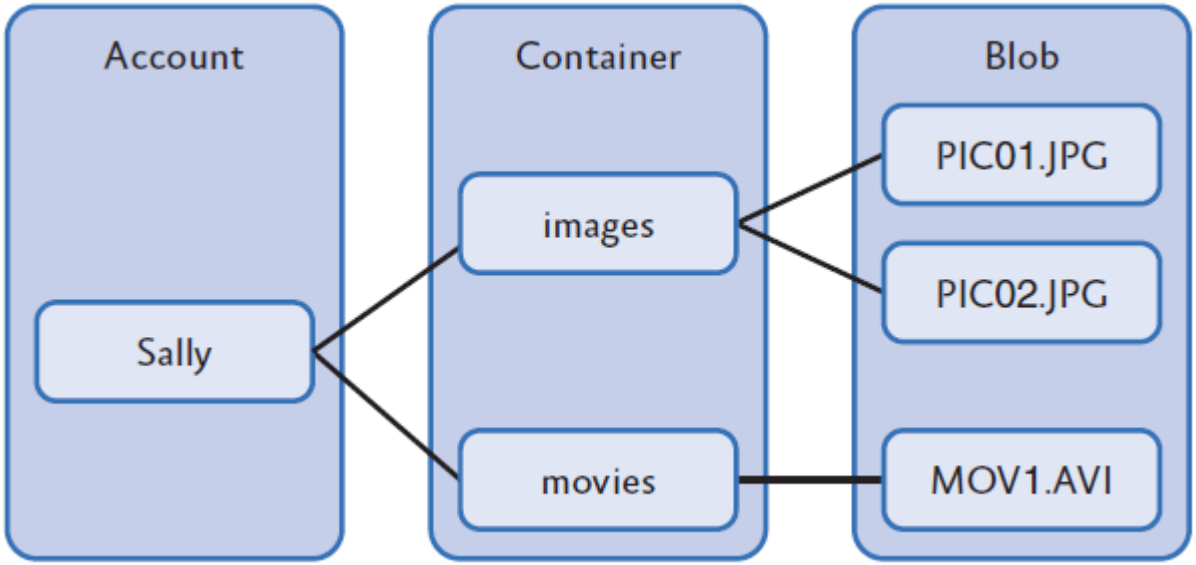
storage





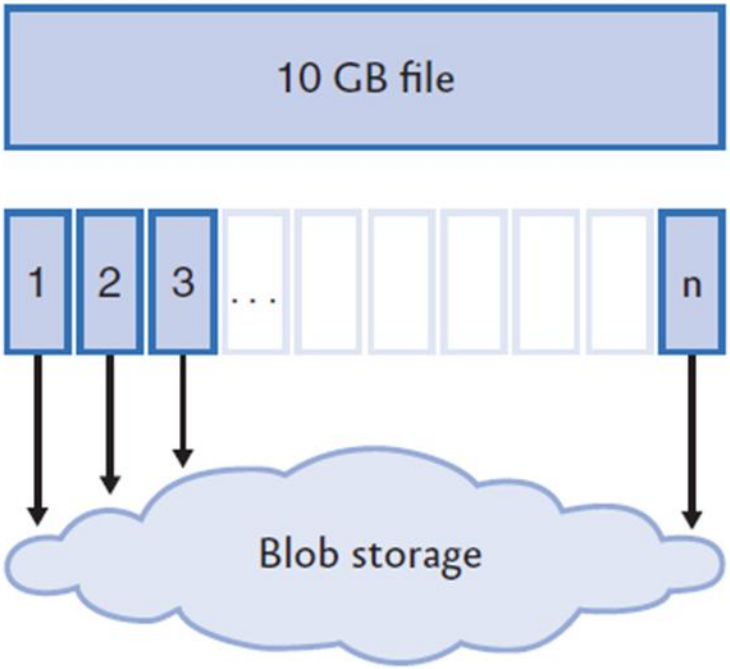
.REST and client library access
.NTFS APIs for drives
.uses 512 bit secret

blob storage



.metadata <name, value> pairs, up to 8KB per blob
.block and page blob
...size limit depends of blob type

block blob



Thread 1:

```
PutBlock(1,block[1])
PutBlock(2,block[2])
...
```

Thread 2:

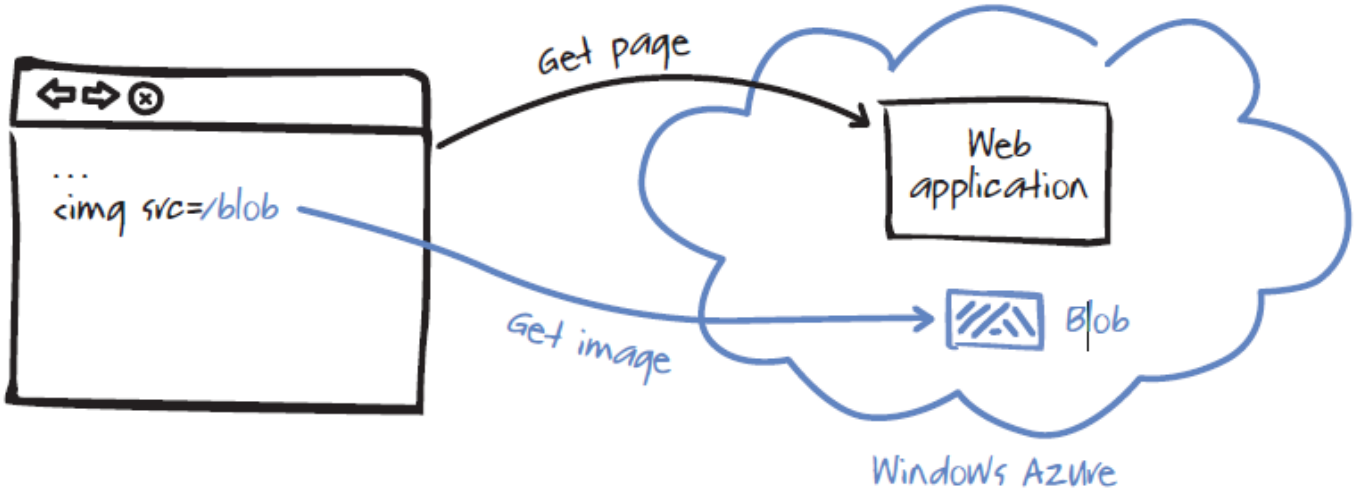
```
PutBlock(3,block[3])
PutBlock(n,block[n])
...
```

```
PutBlockList(1,2,3,...n)
```

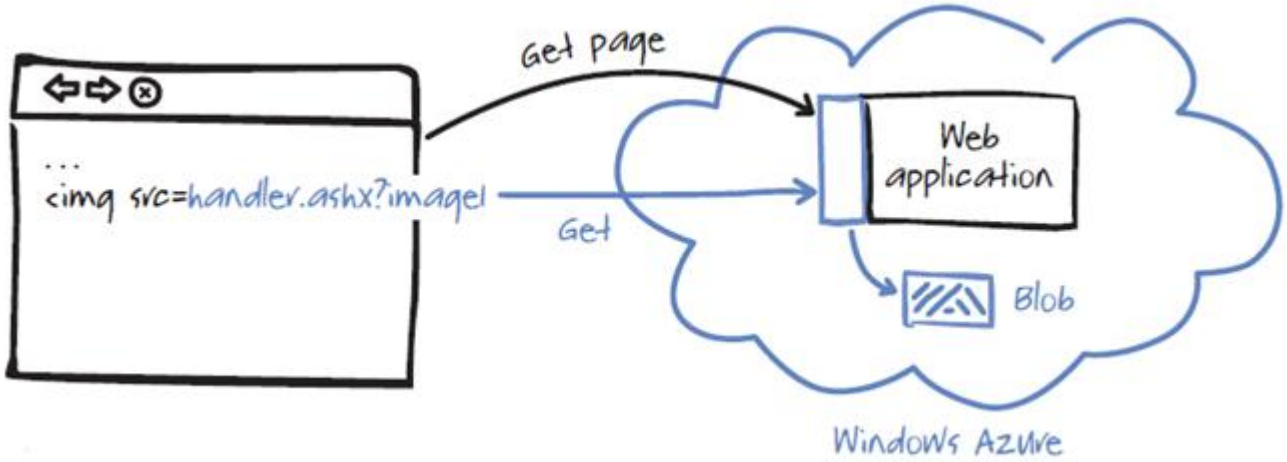
.targeted at streaming workloads
.each blob consists of a sequence of blocks
.blocks are uploaded and separately committed
.size limit 200GB per blob

blob access

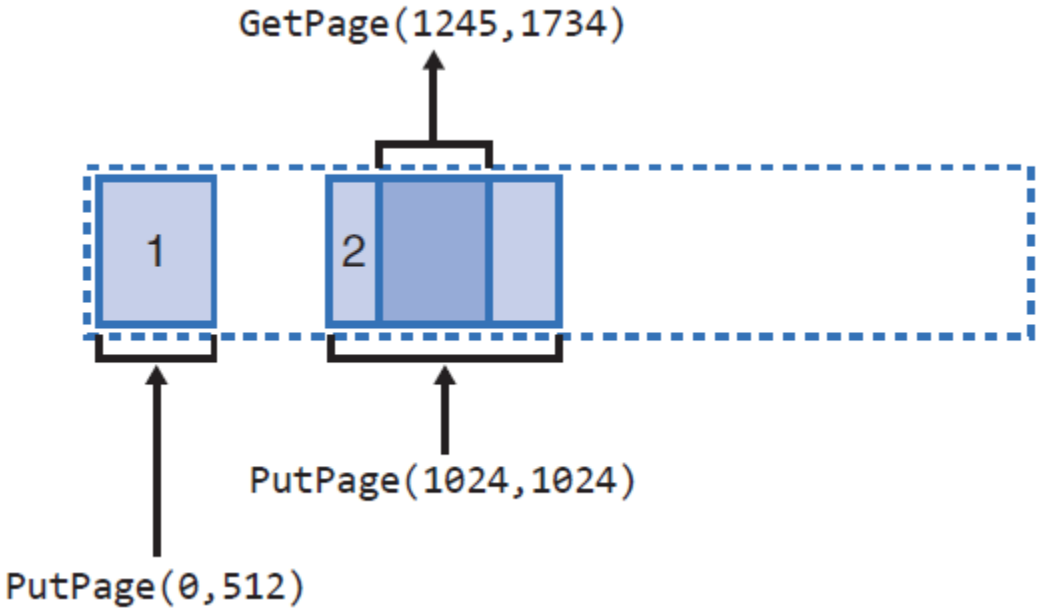
.Anonymous access for public downloadable and cacheable content



.Shared Access Signature (SAS) -> time limited, uniquely generated URLs

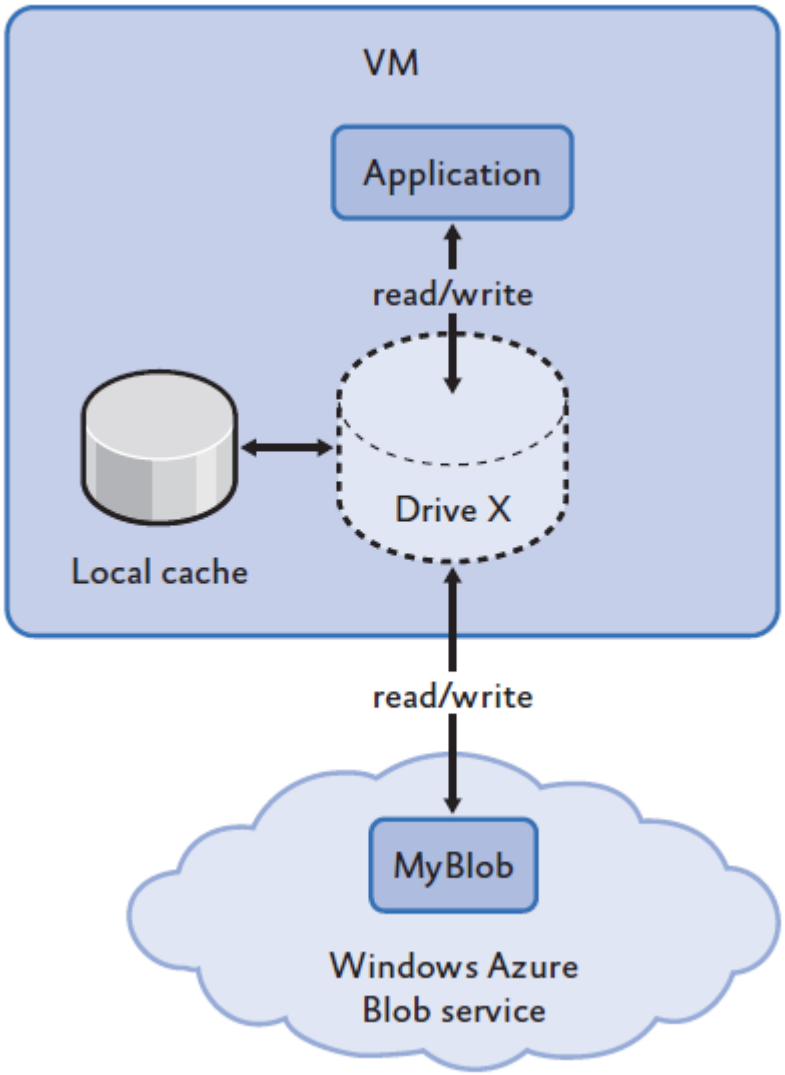


page blob



.targeted at random read/write workloads
.each blob consists of an array of pages
.each page range write is committed on PUT
.size limit 1TB per blob

drive



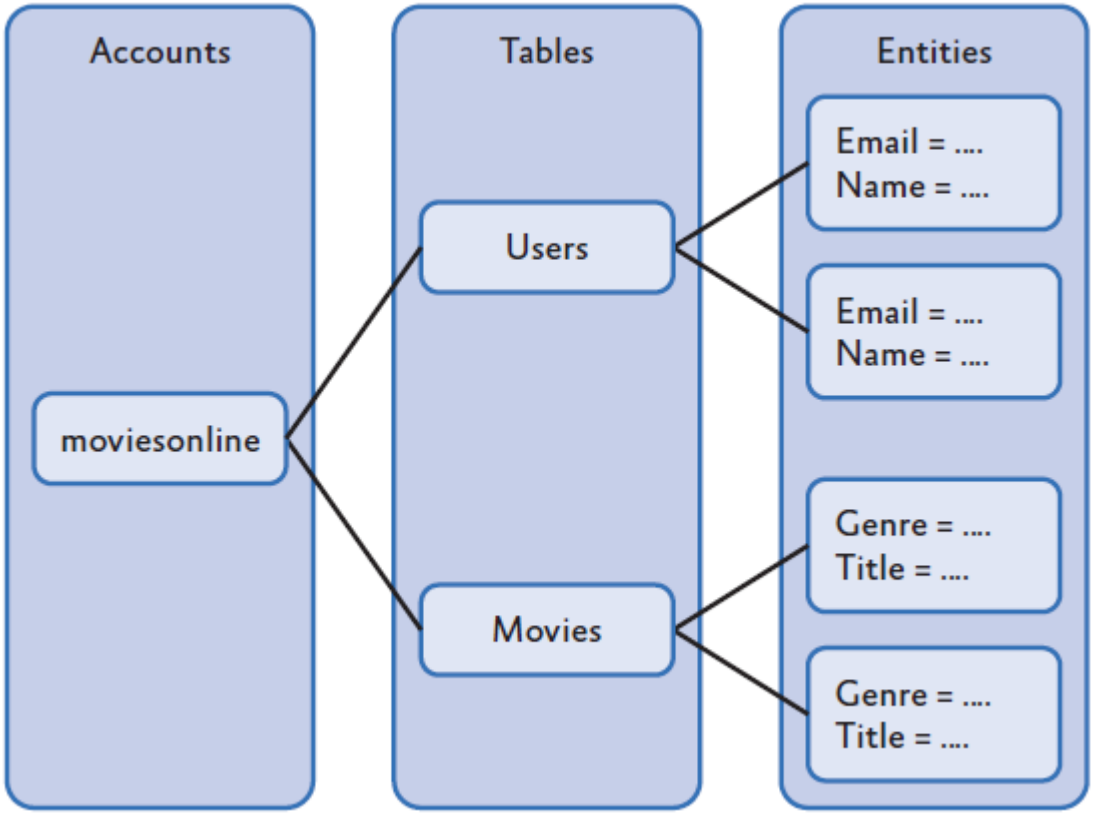
.provides a durable NTFS volume

.page blob mounted over the network as an NTFS drive

.accessed through existing NTFS APIs to access

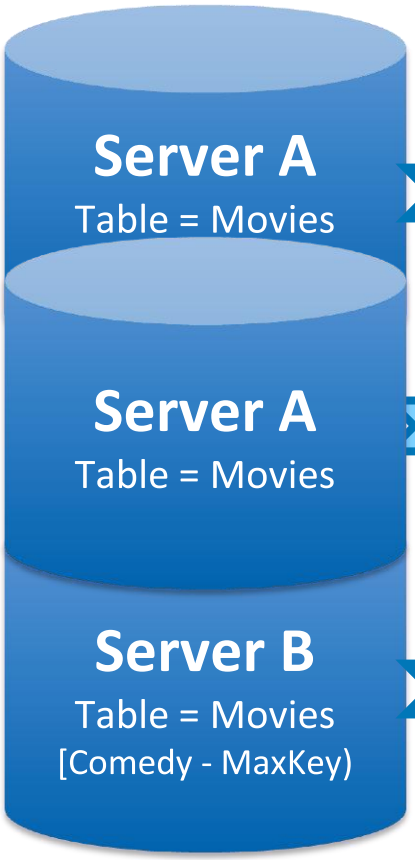
.local storage for cache to serve reads

tables



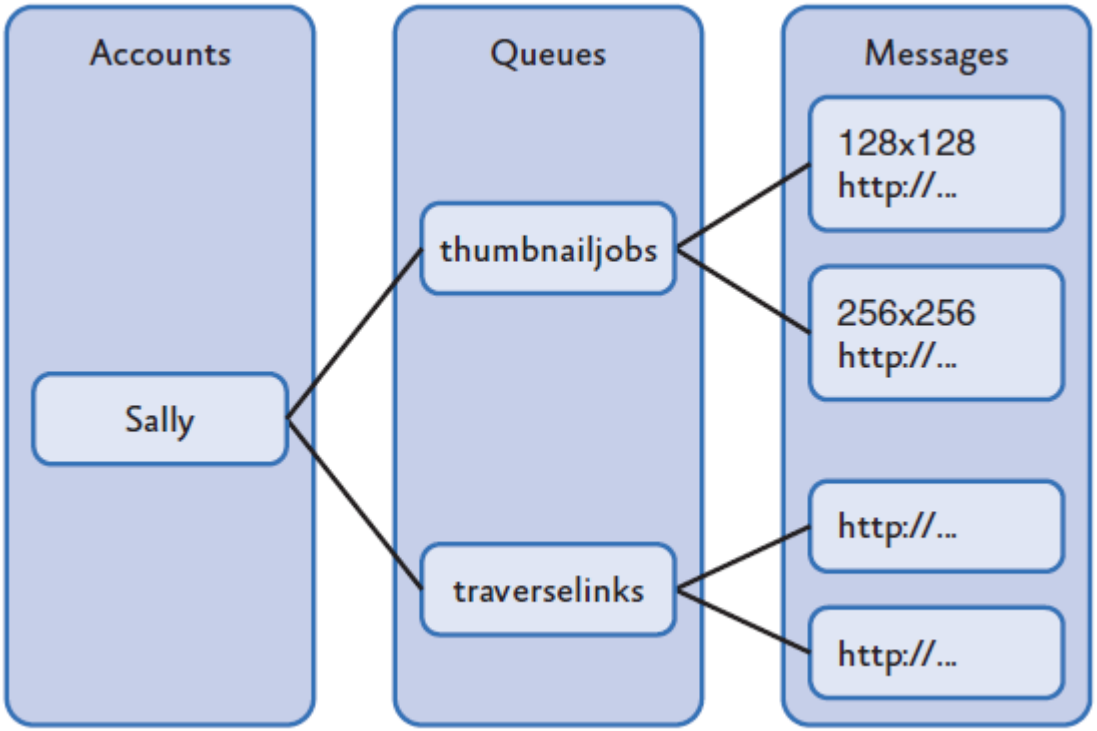
.each entity can have up to 255 properties
.each property is stored as a <name, typed value> pair
.each entity requires a PartitionKey & RowKey
.transactions within partitions only
.no fixed schema
.continuation token for query results > 1000 entries

partitions



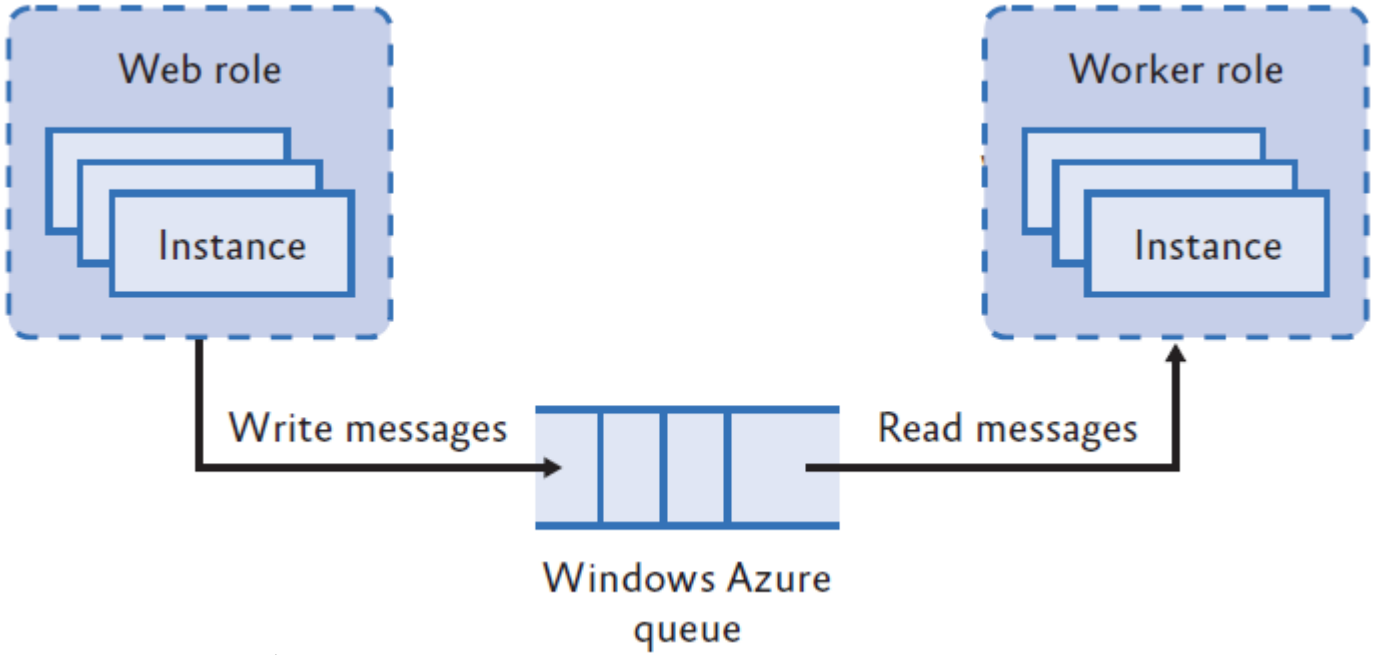
PartitionKey (Category)	RowKey (Title)	Timestamp	ReleaseDate
Action	Fast & Furious	…	2009
Action	The Bourne Ultimatum	…	2007
…	…	…	…
Animation	Open Season 2	…	2009
Animation	The Ant Bully	…	2006
Comedy	Office Space	…	1999
…	…	…	…
SciFi	X-Men Origins: Wolverine	…	2009
…	…	…	…
War	Defiance	…	2008
War	Defiance	…	2008

queues



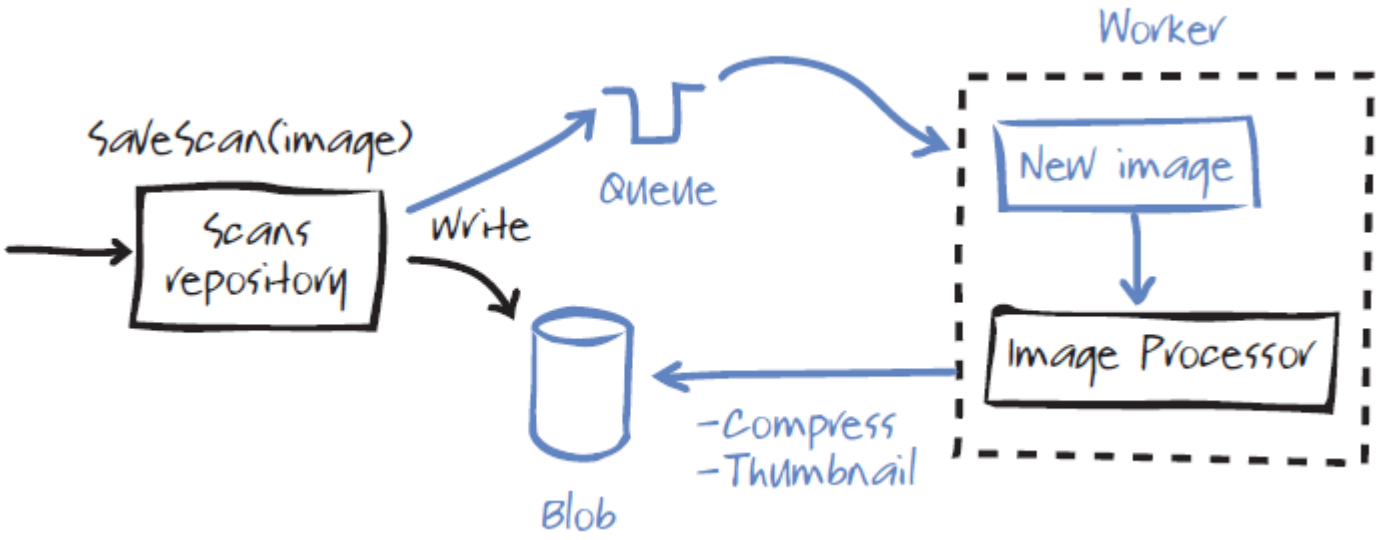
.messages can be up to 8KB
.many workers may consume the queue

working with queues



.message placed in queue
.worker de-queues message
...message is marked as invisible for a specified time
...worker deletes message when finished processing it
.message may be processed more than once
...make message processing idempotent
messages put into queue may be processed in any order

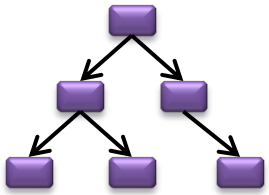
working with queues



.use blob to store large messages, store blob ref in message

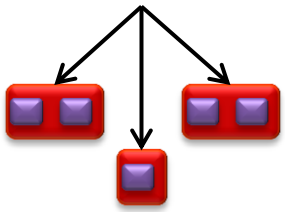
storage options

Azure Table



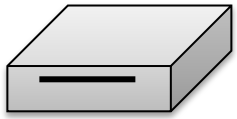
Structured Storage

Azure Blob



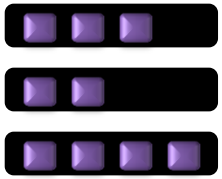
Unstructured Storage

Azure Drive



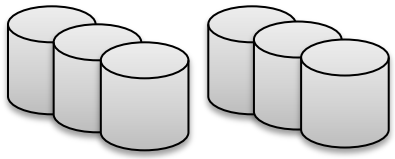
NTFS Drive

Azure Queue



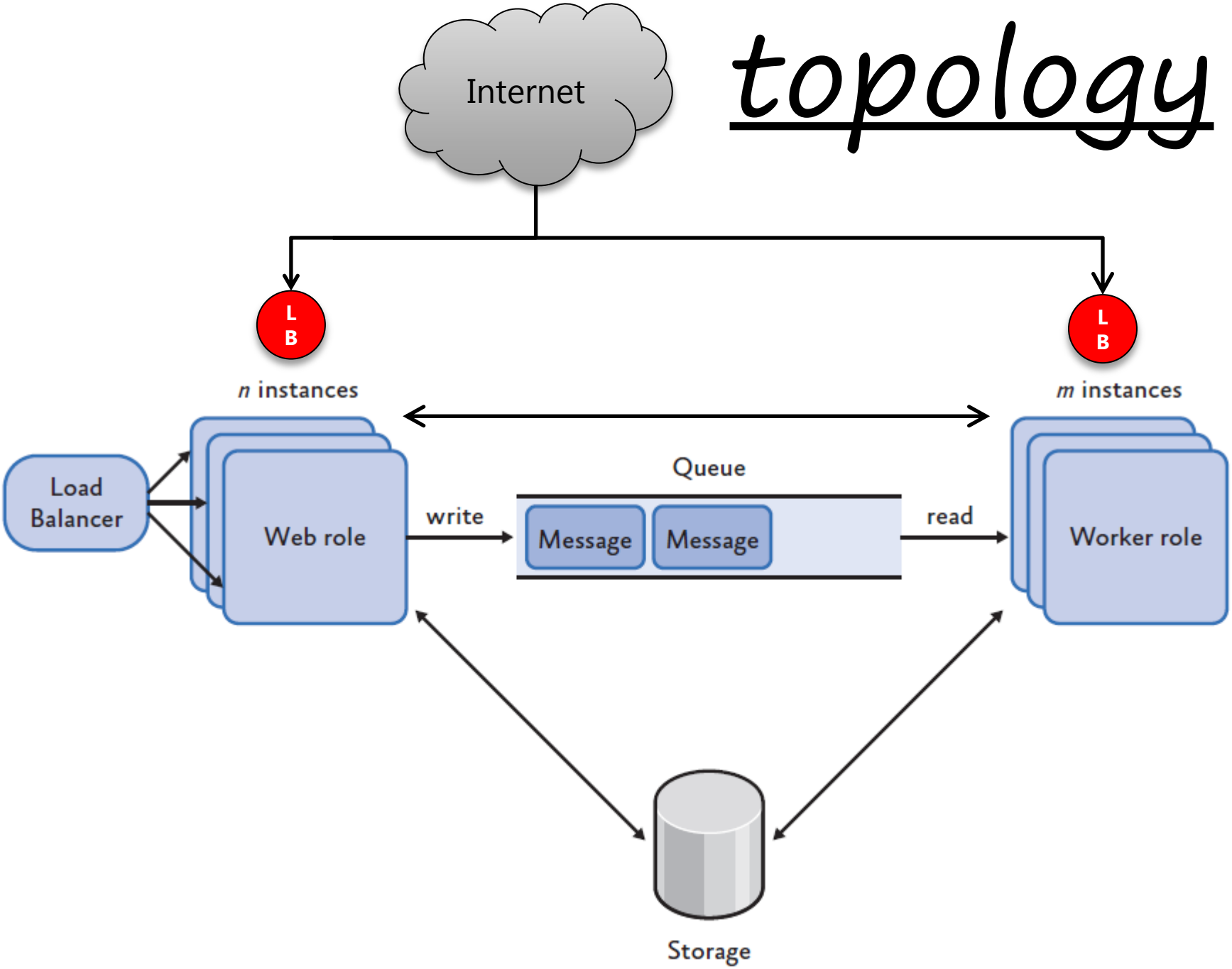
Service Communication

SQL Azure



Relational Database

topology


Internet
L B
L B
n instances
m instances
Load Balancer
Web role
write
Queue
Message
Message
read
Worker role
Storage

compute elasticity

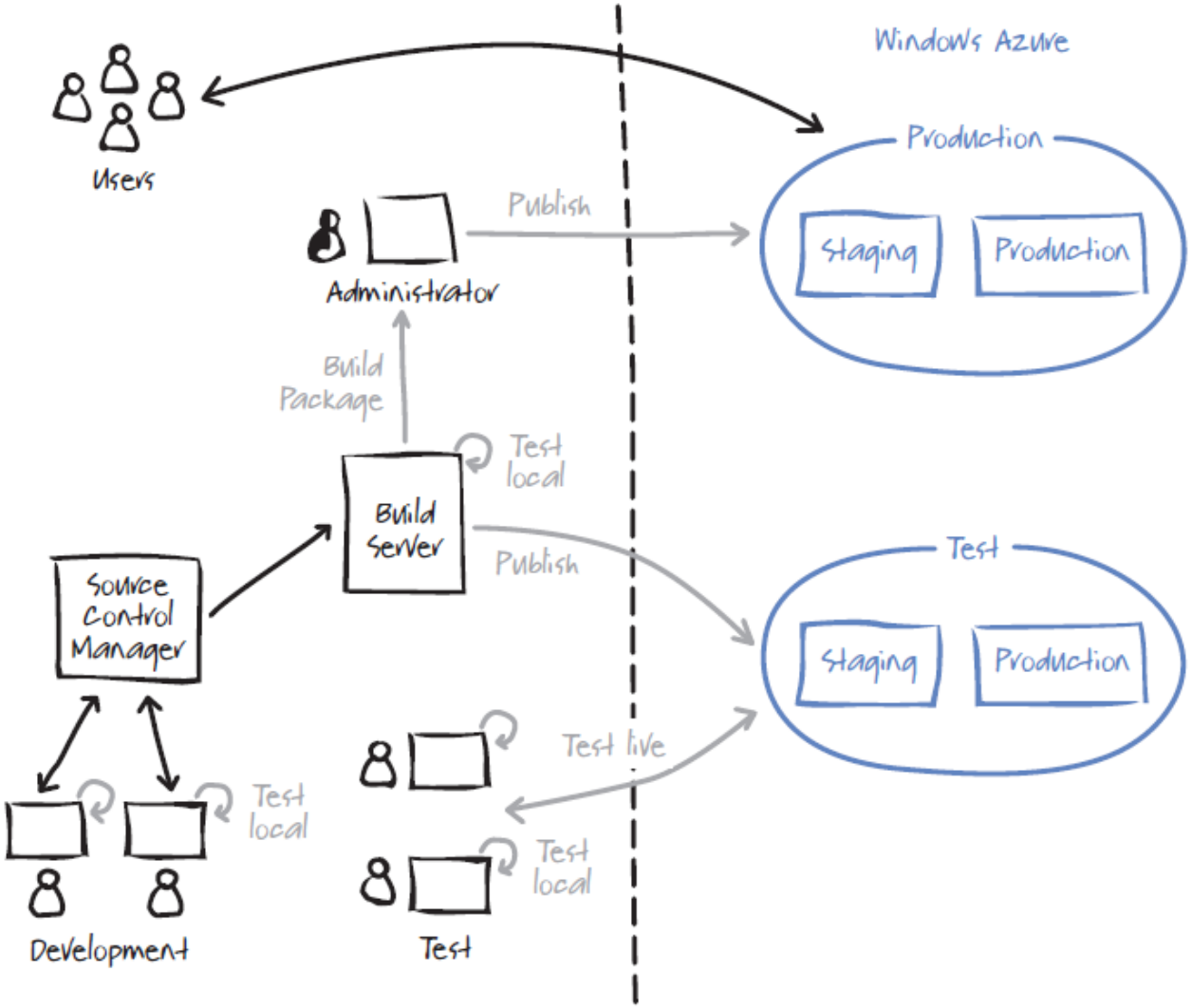
observe load

(CPU meter, queue size, IO capacity, ...)

vertical - adjust vm resources

horizontal - adjust # of instances

life cycle


Windows Azure
Users
Production
Staging
Production
Publish
Administrator
Build
Package
Test
local
Build
Server
Publish
Source
Control
Manager
Test
Staging
Production
Test live
Test
local
Test
local
Development
Test

pricing

Compute:

Per Service Hour

Starting at $0.12/service hour +

Variable instance sizes

Storage

Per GB stored & transactions

Blob & table $0.15 / GB

Storage Access = $0.10 / 100K Transactions

Bandwidth

Per GB transfer in or out of a datacenter

US/EU Bandwidth = $0.10 in / $0.15 out / GB

Asia Pacific = $0.30 in / $0.45 out / GB

Developing Applications for the Cloud on the Microsoft Windows Azure™ Platform

http://msdn.microsoft.com/en-us/library/ff966499.aspx

conclusion

platform as a service.
familiar and open.
symmetric.

go to sitecore session @ JAOO

http://www.windowsazure.com