Microsoft Azure Cloud for Solution Architects

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About me

- 7+ years design and developing SharePoint solutions.
- 13+ career on the Microsoft technology stack for enterprise.
- Worked for Deloitte, PwC, Infusion, Accenture
- .NET, JavaScript, Office 365, Azure
- Certification: 70-532 Developing MS Azure Solutions
- U of T computer science
- Azure Overview
- Design and Prototyping
- Scalability and Performance
- Commentary
## Azure Overview

<table>
<thead>
<tr>
<th>PaaS</th>
<th>IaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• App Services</td>
<td>• Virtual Machines</td>
</tr>
<tr>
<td>• Storage</td>
<td>• Virtual Network</td>
</tr>
<tr>
<td>• Cloud Services</td>
<td>• Storage</td>
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</tbody>
</table>
Azure Platform as a Service

App Services
- Web App
- Mobile App
- API App
- Logic App

Storage
- SQL Azure
- Table, Queues, Event Hub, Notification

Cloud Services
- Web Role
- Worker Role

Azure Active Directory
- Multi-factor authN
- Advanced security alerts
App Services
Cloud Service

Opinion: Hybrid of App Service and IaaS Virtual machines

IIS web servers

Windows services

Background processes
Azure Infrastructure as a Service

- Virtual Machines
- Storage
  - Page blogs “virtual disks”
- Virtual Network
## PaaS vs IaaS

<table>
<thead>
<tr>
<th></th>
<th>PaaS</th>
<th>IaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine grained control</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Speed of solution delivery</td>
<td>Faster</td>
<td>Slower</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>(e.g. patching)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Application Developers</td>
<td>Systems Engineers</td>
</tr>
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</table>
## Azure Value Proposition

<table>
<thead>
<tr>
<th>PaaS</th>
<th>IaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Many services catering to a diverse set of specific solution 'form factors'.&lt;br&gt;• Agility Speed of delivery&lt;br&gt;• Less granular control</td>
<td>• General platform to build from scratch any solution</td>
</tr>
</tbody>
</table>
### Azure Value Proposition

- **Mix and Match PaaS and IaaS to design a Solution Architecture**

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<table>
<thead>
<tr>
<th>Catalog of Services</th>
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</thead>
<tbody>
<tr>
<td><strong>COMPUTE</strong></td>
</tr>
<tr>
<td>Virtual Machines</td>
</tr>
<tr>
<td>Cloud Services</td>
</tr>
<tr>
<td>Service Fabric</td>
</tr>
<tr>
<td>Batch</td>
</tr>
<tr>
<td>Scheduler</td>
</tr>
<tr>
<td>Remote App</td>
</tr>
<tr>
<td><strong>NETWORKING</strong></td>
</tr>
<tr>
<td>Virtual Network</td>
</tr>
<tr>
<td>Express Route</td>
</tr>
<tr>
<td>Traffic Manager</td>
</tr>
<tr>
<td><strong>IDENTITY &amp; ACCESS</strong></td>
</tr>
<tr>
<td>Active Directory</td>
</tr>
<tr>
<td>Multi-Factor Authentication</td>
</tr>
<tr>
<td><strong>WEB &amp; MOBILE</strong></td>
</tr>
<tr>
<td>Web Apps</td>
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<tr>
<td>Mobile Apps</td>
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<tr>
<td>API Apps</td>
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<tr>
<td>Logic Apps</td>
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<tr>
<td>Notification Hubs</td>
</tr>
<tr>
<td>HDInsight</td>
</tr>
<tr>
<td><strong>ANALYTICS</strong></td>
</tr>
<tr>
<td>Machine Learning</td>
</tr>
<tr>
<td>Stream Analytics</td>
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<tr>
<td><strong>DATA</strong></td>
</tr>
<tr>
<td>SQL Database</td>
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<tr>
<td>DocumentDB</td>
</tr>
<tr>
<td>Redis Cache</td>
</tr>
<tr>
<td>Search</td>
</tr>
<tr>
<td>Tables</td>
</tr>
<tr>
<td><strong>DEVELOPER SERVICES</strong></td>
</tr>
<tr>
<td>Visual Studio Online</td>
</tr>
<tr>
<td>Application Insights</td>
</tr>
<tr>
<td><strong>HYBRID INTEGRATION</strong></td>
</tr>
<tr>
<td>Storage Queues</td>
</tr>
<tr>
<td>BizTalk Services</td>
</tr>
<tr>
<td>Hybrid Connections</td>
</tr>
<tr>
<td>Service Bus</td>
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<tr>
<td>Automation</td>
</tr>
<tr>
<td>Portal</td>
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<tr>
<td>Key Vault</td>
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<tr>
<td>Operational Insights</td>
</tr>
<tr>
<td><strong>COMMERCE</strong></td>
</tr>
<tr>
<td>Store / Marketplace</td>
</tr>
<tr>
<td>VMDepot</td>
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</tbody>
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Azure Value Proposition

**Hosting**
- Auto-scaling
- Redundancy
- Patching
- Restore

**Build & Deployment**
- Deploy to Prod and non-prod environments
- Continuous delivery
- IDE integration
- Azure SDK and PowerShell modules

**Operational**
- Management
- Monitoring
- Alerting
- Troubleshooting
With Azure's quick provisioning, you can presumably have time enough effort in solution architecture proof of concepts of a distributed architecture during solution design phase.

- helps identify architectural risk and issues for mitigation early on
- Demo to project stakeholders to gain confidence and sign off
Use Case:
Publish internal applications to the internet with single sign-on with corporate identity.

Technology stack:
Web Application Proxy
Active Directory Federation Services
Use Case:
1. Import word orders excel file
2. Track and complete orders
3. Generate monthly invoices

Architecture:
Azure Web App integration with SharePoint Online

Technology stack:
ASP .NET MVC
Office 365 SharePoint Online
Azure AD
PaaS POC Example

Conceptual Solution

Work Orders

- Invoices
- Reports

Business process automation
Automatic invoicing

Customer
Manager
Service Provider
Project Manager
Field Technicians

Receive Reports
Send directly
Real-time tracking and reports
Get orders
Update orders
Pending Work Orders
PaaS POC Example

Send Email & attachment

Pending Work Orders

SendGrid

Inbound Parse

Callback URL (web api)

Provider Hosted App
Azure Web Site

CSOM

SharePoint Online

Office 365

Provider Hosted App
Azure Web Site

Callback URL (web api)

Logs

Table

Azure SQL database

Azure AD

WebJobs
Architect Design Responsibilities

Architecture "-ilities"

- Scalability / Performance
- Availability / Reliability
- Recoverability
- Security
- Maintainability / Flexibility
- Extensibility
- Usability
- Portability

Challenging to validate performance assumptions at design time.
Designing for Performance

Scalability/performance
- User load, backend load and data volume assumptions can have high variability
- Determining scalability and server resources needs based on workload model
- What to specific conditions to monitor? How architecture is to respond?
- What can generally happen is that, these challenges are covered by a set of assumptions, risks/mitigation in the design document.
- Can you really confidently promise specific SLA to the business?
  - 3 second response time, 99.9% uptime, business continuity
Establish workload model

- # of users
- # concurrent user base
- transactions per second
- data volume
  - user generated
  - backend
  - application generated
- throughput
Designing for Performance

Cloud Service

Visual Studio Load Test

Azure Monitoring Alerting Diagnostics
Aligning to Service Level Agreement or Service Level Objectives

- Expected response time
- Throughput
- Capacity
- Server Resources Usage
- Uptime
Key Take Away Vision

- **Rapidly** prototype, build and deploy solutions leveraging Azure.
- Independence from infrastructure teams for needed resources for design prototyping.
Call To Action

Resources

- Microsoft Azure Documentation
  https://azure.microsoft.com/en-us/documentation

- Try Azure as a Free Trial $250 credit for 30 days or use your MSDN subscription if you have one

- Microsoft Virtual Academy

- Blogs from Azure subject matter experts
Thank You Sponsors!

PLATINUM

NINTEX

GOLD

bonzai
Infowise
hab
K2
KWizCom
slalom

SILVER

AvePoint
ExtranetUserManager
Total Solutions
webtrends

RAFFLE

2toLEAD
RENCORE
VisualSP
Thank you!

Toronto Enterprise Collaboration User Group
Change Management, Governance, SharePoint, Office 365, Yammer, PowerBI, etc
http://www.meetup.com/TSPBUG/

Toronto SharePoint Business Users Group
http://www.meetup.com/TorontoSPUG/

See you next year!

Saturday July 9, 2016
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Please do evals
http://spbuzz.it/spsto2015-evals