The Power of the Cloud is Closer Than You Think

Jeff Hoffmann

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agenda

- SWC Introduction
- What is the Cloud?
- What is Azure?
- Why Build Applications for Azure?
- Case Studies
  - Converting an Application to Azure
  - Building an Application for Azure
- Questions and Next Steps
You Don’t Have to Take Notes...

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Tweet to @SWCTechPartners with the hashtag #SWCEvents with questions and comments during the presentation!
Before We Start – Our Demonstration (While I Talk)

- Create Three Small Azure Environments:
  - Development
  - Staging
  - Production
- Deploy a Basic Application to All Environments
- Enable Auto-Scaling
- Perform Basic Load Testing
- Re-Scale as Necessary

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SWC is a leading provider of innovative IT solutions for the midmarket. For more than 30 years, SWC has excelled at providing strategic guidance and delivering best-in-class solutions tailored to fit growing organizations.
About SWC Technology Partners

- Software Architecture
- Custom Development
- Collaboration
- Business Intelligence
- CRM
About SWC Technology Partners

- Digital Creative & Design
- Digital Marketing Platforms
- SEO / SEM
- Social Media
- Videography
About SW C Technology Partners

- IT Strategy & Security Advisory
- Advanced Networking
- Virtualization & Consolidation
- Unified Communications
- Systems Management
At SWC we get past the hype and help our clients use the Cloud to move their business to new heights.

- Advisory
- Infrastructure
- Software
- AppDev
- Recovery
“There’s no way that company exists in a year.”

Tom Siebel, Founder of Siebel CRM Systems, referring to SalesForce.com (2001)
“The computer industry is the only industry that is more fashion-driven than women's fashion. Maybe I'm an idiot, but I have no idea what anyone is talking about. What is [the Cloud]? It's complete gibberish. It's insane. When is this idiocy going to stop?”

Larry Ellison, CEO, Oracle Corporation, referring to the Cloud (2008)
What is the Cloud?

The Cloud is...

“...scalable IT-enabled capabilities...delivered ‘as a service’ to external customers using Internet technologies”

“IT services that are deployed and delivered over the Internet and are scalable on demand”
Cloud Service Model View

CLOUD CONSUMERS

Software as a Service (SaaS)
Office 365, Salesforce, SharePoint Online...

Platform as a Service (PaaS)
Development Platform, Execution Runtime, Database, Web...

Infrastructure as a Service (IaaS)
Compute, Network, Storage...
Our Cloud Solutions include:

- **Cloud Advisory**
- **HOST** IaaS
- **BUILD** PaaS
- **RUN** SaaS
- **RECOVER** RaaS
WINDOWS AZURE & SWC: BRING CLOUD TO YOUR BUSINESS
Comprehensive set of services that enables you to quickly build, deploy and manage applications across a global network of Microsoft-managed data centers.
Windows Azure

App Services
- Cloud Services
- Caching
- Identity
- Service Bus
- Media
- Mobile Services
- Web Sites
- Integration
- HPC
- Analytics

Data Services
- SQL Database
- HDInsight
- Table
- Blob Storage

Infrastructure Services
- Virtual Machines
- Virtual Network
- VPN
- Traffic Manager
- CDN
Windows Azure

App Services
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Apps

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Windows Azure

DEVELOP, TEST, RUN YOUR APPS

TEST & DEVELOPMENT ON-PREMISES

- Limited hardware budget
- Limited software licensing
- Resource contention with VMs
- Compromised developer agility
- Realistic scale tests often challenging

YOUR DATACENTER

DEVELOPERS

Use VMs

VMs IN TEST/DEV ENVIRONMENT

IT ADMIN

Provision VMs

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Windows Azure

DEVELOP, TEST, RUN YOUR APPS

- Cost effective (pay for what you use)
- Improved developer agility with platform services
- Ready to use gallery of images
- Ship tested in realistic scale scenarios
- Use existing development tools & languages
- Access on-premise resources if necessary

TEST & DEVELOPMENT USING WINDOWS AZURE

DEVELOPERS

USE VMs

PROVISION VMs

IT ADMIN

MANAGE ENVIRONMENT

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WEBSITES WITH GLOBAL REACH

• Build websites with global scale
• Built-in support for open web frameworks
• Managed by Microsoft
• Improve performance with Traffic Manager
REACH WHERE YOUR DATACENTER WON’T

WINDOWS AZURE MOBILE SERVICES
TURNKEY BACKEND FOR MOBILE APPS

- Extend internal web apps to mobile devices
- Quickly build and deploy consumer facing apps
- Land your app on any platform or device
Why Build Applications in the Cloud?

- **Speed**
- **Scale**
- **Economics**
Provision in Minutes

- Websites
- Cloud Services
- SQL Databases
- Virtual Machines from the Gallery:
  - Application Servers (SQL Server, SharePoint, BizTalk)
  - Linux Servers (CentOS, Ubuntu, SUSE)
  - Etc...

Scale is Built-In

- Sticky Sessions / Pre-configured load balancers
- Service Bus
- Pre-built Mobile web services
- Redis cache — Shares data between website instances
- CDN feature set
- Geo-located applications/data and re-direction
- Application Insights

Deploy and Roll Back Easily

- Continuous Deployment with Git, TFS, GitHub
- Deploy from Visual Studio or Visual Studio Online
- Compare source and destination files and skip unmodified files
- Easily roll back to previous version of the website
- Automate deployments
- Schedule automated deployments
- Eliminate downtime associated with deployments
- Performance-based Autoscaling
- Schedule-based Autoscaling
- API and .NET SDK for scaling by defined performance counters
- Scale all Azure Compute Services
  - Cloud Services
  - Virtual Machines
  - Mobile Services
  - Web Sites
- Pay-As-You-Go Pricing Model
- No commitment – pay only for what you use each month
- Cancel at any time
- Spin up (and down) environments as and when you need them
- Real-time analysis of current and projected spend to make adjustments on the fly
- Costs a fraction of on-premise in most cases
CASE STUDY: MIGRATING AN EXISTING APP TO AZURE
Case Study for Moving an Existing App to Azure

Context
- Web-based registration system for conventions and tradeshows
- Pre-show continuing education features
- Onsite tradeshow registration and self-service kiosk software
- More than 30K registrants are processed by the system for an event
- Users demand one second response time

Considerations
- Consistent, peak load four weeks of the year
- 48 weeks of the year utilize a fraction of the bandwidth used during peak load
- Existing architecture – performance degrades after 50 concurrent users
- Hardware is four years old and due for a refresh

Opportunities
- SCALE – Scale application to accommodate anticipated load
- ECONOMICS – Pay less for infrastructure
<table>
<thead>
<tr>
<th>Configuration</th>
<th>50 Users</th>
<th>1,000 Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-Lo</td>
<td>2,000</td>
<td>5,000</td>
</tr>
<tr>
<td>1 Small</td>
<td>1,500</td>
<td>4,000</td>
</tr>
<tr>
<td>4 Small</td>
<td>1,200</td>
<td>3,500</td>
</tr>
<tr>
<td>1 Large</td>
<td>1,000</td>
<td>3,000</td>
</tr>
<tr>
<td>4 Large</td>
<td>900</td>
<td>2,500</td>
</tr>
</tbody>
</table>

- Co-Lo does not satisfy peak loads.
- 1 small Azure server satisfies non-peak load.
- 4 large Azure servers satisfy peak loads.
Our Tests

Cost Per Day

- Co-Lo
- 1 Small
- 4 Small
- 1 Large
- 4 Large

Scale from small to large to satisfy peak

50 Users
1,000 Users

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Memory and bandwidth needed to support load were larger than anticipated. In less than 10 minutes, the server size was reduced to a smaller instance and auto-scale was configured to add a new server whenever CPU exceeds 60%.
Application Remediation

- Absolute path references changed to relative paths
- Shift file-based logging to a database table
- Uploaded content shifted to blob storage
- Session state provider changed and serialized
- Printing leverages web services to allow for on-premise printing

Database Remediation

- Primary key remediation
- Database triggers removed
- Extended properties removed
# Results By the Numbers

<table>
<thead>
<tr>
<th>SPEED</th>
<th>2</th>
<th>Number of hours to provision <strong>3 environments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEED</td>
<td>7</td>
<td>Number of days to <strong>retro-fit</strong></td>
</tr>
<tr>
<td>SCALE</td>
<td>2000%</td>
<td>Increase in user load <strong>during peak</strong></td>
</tr>
<tr>
<td>SCALE</td>
<td>600%</td>
<td>Difference in cost from peak to <strong>non-peak usage</strong></td>
</tr>
<tr>
<td>SCALE</td>
<td>5</td>
<td>Minutes it takes to <strong>manually</strong> scale up or down</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>3</td>
<td>Dollars per day for <strong>licensing and infrastructure</strong> in trough</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>36</td>
<td>Dollars per day at the <strong>peak</strong></td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>84%</td>
<td>Savings compared to <strong>on-premise</strong> solutions that meets needs</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>78%</td>
<td>Savings compared to <strong>current</strong> on-premise solution</td>
</tr>
</tbody>
</table>

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WHO CARES?
We need Development, Staging, QA and Production environments for a webserver, 2 SQL databases and an SFTP server. And we only need it for 1 year.

– Technical Architect / Developer

I need to load test my environment and application in anticipation of my go-live date.

– Quality Assurance Manager
Who Cares?

“I want the ability to stage my code in anticipation of going live and roll it back with minimal downtime.”

– Release Manager

“I want to minimize the overhead of maintaining multiple, under utilized integration and testing environments.”

– CIO / Director of IT
CASE STUDY — BUILDING AN APPLICATION FOR AZURE
Case Study for Building a New App for Azure

Context
- Event Marketing and Incentive firm supporting major mobile telecom client
- Sales team mobile dashboard used for tracking individual performance
- Registration and onboarding management system

Considerations
- Initial load: 2800+ users following go-live
- Site will serve 80MB videos
- Go-live crash associated with unexpected load will cripple user adoption
- One more thing, we launch in three weeks...

Opportunities
- SPEED: Launch in three weeks
- SCALE: Handle anticipated usage spikes
- ECONOMICS: Environments not needed after 14 months
Performance Impacts of Moving an App to Azure

**Cost ($ Per Week**

- Utilization
- Co-Lo
- Azure

Week 1 to 51
<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEED</td>
<td>3</td>
<td>Number of environments stood up in three hours</td>
</tr>
<tr>
<td>SPEED</td>
<td>80%</td>
<td>Code deployment time reduction</td>
</tr>
<tr>
<td>SPEED</td>
<td>3</td>
<td>Weeks from start to launch</td>
</tr>
<tr>
<td>SCALE</td>
<td>4</td>
<td>Hours devoted to load testing</td>
</tr>
<tr>
<td>SCALE</td>
<td>5</td>
<td>Minutes to manually scale up the infrastructure</td>
</tr>
<tr>
<td>SCALE</td>
<td>2</td>
<td>Days before we scaled the infrastructure down to the minimum</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>10%</td>
<td>Cost of Azure solution vs. co-located solutions</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>5</td>
<td>Dollars per day for licensing and infrastructure</td>
</tr>
<tr>
<td>ECONOMICS</td>
<td>0</td>
<td>Dollars per day when program is complete</td>
</tr>
</tbody>
</table>
ACTIVELY EVOLVING ARCHITECTURE
NEXT STEPS
What Applications are the Strongest Candidates?

.NET/SQL CONVERSIONS:
- Hardware nearing end-of-life
- Performance/load is a problem
- Load is inconsistent

NEW .NET/SQL APPLICATIONS:
- All applications should be considered except when:
  - Compliance forbids it
  - User interface requires real-time, high-speed, integration with on-premise data
1-Day Azure Conversion Readiness Assessment

- Identify remediation effort
- Quantify benefit
- High-level go-forward plan

1-Day Azure Development Planning

- Understand application requirements
- Identify Azure architecture opportunities and strategies
- Confirm Azure ROI benefit
Get Started with Microsoft-Sponsored Assessments
Focused on Cloud Solutions (Azure, Dynamics CRM, Lync, O365, Power BI, SharePoint & System Center)
Thinking About Moving to the Cloud? Let Microsoft Help You Pay for It!
Thank You For Joining Us!

To learn more, please contact:

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