Exploring Windows Azure Platform

Meet the expert: Scott Klein, a Microsoft SQL Azure MVP, has been working with SQL Server for nearly 20 years, working with companies large and small all over the United States. Scott is also a veteran author having written a number of books including Professional SQL Server XML, Professional LINQ, Pro ADO.NET Entity Framework 4.0, and the recently released Pro SQL Azure. Scott is President of the South Florida SQL Server Users Group and the newly formed SQL Azure PASS Virtual Chapter. He speaks frequently at SQL Saturday events and user groups, including several in Europe.

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Course description: As everything goes to the cloud it would come to reason the same thing would happen to business applications and data storage. Enter the Microsoft Windows Azure Platform, the Microsoft cloud solution. Using a cloud benefits a company by allowing the usage of the online servers to store and run applications without the expense and man hours needed to maintain the hardware while saving money on licensing costs. This exploring course will cover the many aspects and components of Windows Azure. The course will give you an introduction to Azure, the different types of services that can be hosted in Windows Azure such as web and worker roles, and then move on to the basics of Azures durable storage solution, which include Azure queues, blobs, and tables. Next you will get a full introduction in SQL Azure, the Microsoft cloud-based relational database, and how you can use SQL Azure to store your relational data on the cloud. This will be followed up by discussions including Azure AppFabric, Cloud Computing Patterns & Practices and Diagnostics & Service Management.

Course outline:

Intro to Cloud Computing
- Introduction
- Non-Cloud View
- Cloud View
- Load Patterns
- This has Happened Before
- Cloud Services
- Introducing Windows Azure
- Azure Platform Data Centers
- Azure Security Layers
- Inherited Defenses
- Azure Platform Appliance
- Anatomy of an Azure Service
- Storage in Windows Azure
- Azure Consumption Prices
- Azure Purchasing Models
- Introductory Account
- Monthly Service Level Agreement
- The Developer Tools
- Demo: Azure Managment Portal
- Summary

Roles
- Introduction
- Creating an Azure Account
- Demo: Creating an Account
- Roles and Instances
- Comparison of Role Types
- Compute Service Roles
- Compute Services Security
- Fabric Controller
- Isolation in Windows Azure
- Service Management Security
- Roles
- What is the Web Role
- Full IIS - Overview
- Full IIS Scenario - Walkthrough
- Demo: Hello Azure
- Summary

Worker Roles
- Introduction
- What is a Worker Role
- Role Programming Model
- Worker Role Patterns
- Demo: Worker Role
- What is the VM Role
- VM Role Lifecycle
- VM Role Common Questions
- Instances
- Demo: Prepping the VM
- Demo: Uploading a VM
- Demo: After the Upload
- Summary

Testing and Debugging Roles
- Introduction
- Windows Azure
- Service Deployment
- Service Scaling
- Local Emulator
- SDK Emulator Icon
- Compute Emulator UI
- Storage Emulator UI
- SQL Express
- Are we running in the fabric
- Debugging in the Cloud
- Debugging locally
- Support for IntelliTrace
- Looking at Configuration
- Service Definition
- Three Choices to Deploy Code
- Deploying to the Cloud
- Demo: Testing & Debugging Roles
- Summary

Advanced Roles
- Introduction
- Service Model Enhancements
- Admin Access & Startup Tasks
- Remote Desktop
- Remote Desktop Configuration
- Local Storage
- Local Resource Configuration
- Using a Local Resource
- Endpoints
- Endpoints Model
- Configuring an Endpoint
- Using Endpoints
- Windows Azure Connect: Intro
- Windows Azure Connect: Roadmap
- Demo: Remote Desktop Connections
- Summary

Azure Storage Basics
- Introduction
- Windows Azure Storage
- Storage Infrastructure
- Windows Azure Storage
- Windows Azure Storage Account
- Storage Emulator
- Storage Services Security
- Storage Abstractions
- Accessing Storage with REST
- Using a Library
- With Client Library
- Connection Strings
- Object Hierarchy
- Partitions
- Replication: Behind the Scenes
- Recovery: Behind the Scenes
- How Partitions Scale
- Summary

Azure Storage Queues
- Introduction

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- Tightly Integrated/Loosely Coupled
- What is a queue?
- Messages
- Queue Terminology
- Message Lifecycle
- Working with Queues
- Add a Message
- Peek a Message
- Get a Message
- Deleting a Message
- Polling
- Back Off Polling
- Queues with Shopping
- Long Queues
- State Directed Queues
- Demo: Azure Storage Queues
- Summary

Azure Storage Tables
- Introduction
- What is the Table Service
- Required Properties
- WCF Data Services
- Creating a Table
- An Entity in C#
- Inherit or Add Required Fields
- Create a Context Class
- Adding an Entity
- Deleting an Entity
- Batching
- Queries
- Entity Group Transactions
- Performance
- Guidance
- Costs
- Demo: Table
- Summary

Azure Storage Blobs
- Introduction
- Need Shared Access
- BLOBs in Azure & Size
- BLOB Addresses
- Containers
- Blob Containers
- Working with Containers
- Working with BLOBs
- Uploading a BLOB
- Downloading a BLOB
- Container & BLOB Metadata
- Snapshotting
- Two Types of Blobs
- Uploading a Block Blob
- Page Blob: Random Read/Write
- Shared Access Signatures
- Sample Use
- Content Delivery Network (CDN)
- How Does it Work?
- Windows Azure Drives
- How Azure Drives Work
- Failover with Drives
- Guidance
- Demo: Azure Storage Blobs
- Summary

Drives
- Introduction
- Demo: Azure Drives
- Demo: Adding References
- Demo: Defining Local Resource
- Demo: Asigning a Drive Letter
- Summary

SQL Azure
- Introduction
- Where"s my Stuff?
- History of SQL Server
- A Server is not a Machine
- How it Works
- Set up a Server...
- Demo: SQL Azure
- Demo: SQL Server Managment
- Summary

SQL Azure Considerations
- Introduction
- Considerations
- Connecting to SQL Azure
- SQL Azure Firewall
- SQL Azure Compatability
- SQL Azure Security
- SQL Azure Security Model
- Authorization, Auditing & Encryption
- Migration Options
- Demo: Migration
- Demo: SQL Server Integration
- Demo: Application
- Summary

Considerations cont'd
- Introduction
- Security Model
- Size Matters
- Pricing
- Scale-out with SQL Azure
- Sharding Pattern
- Federations: Concepts
- Creating the Schema
- Querying
- Backups
- Database Copy
- SQL Azure Data Sync
- On-Premises to Cloud Symmetry
- Extending Data
- Sync End to End Scenarios
- Demo: Copying a Database
- Demo: Syncing Databases
- Summary

SQL Azure Performance
- Introduction
- SQL Azure Scalability
- Perfromance vs. Scalability
- Example: Performance
- Performance
- Techniques
- Chunky Calls
- Lazy Loading
- Caching
- Asynchronous Processing
- Parallel Processing
- Sharding
- Scalability
- Approaches
- Scalability Curves
- Scaling can be challenging
- Sharding
- Sharding Pattern
- SQL Azure Federations: Concepts
- Creating the Schema
- Querying
- Demo: SQL Azure Performance
- Demo: Testing the App
- Summary

Windows Azure App Fabric
- Introduction
- AppFabric
- Motivating Challenges
- Identity in the Cloud is Hard
- What is Access Control
- Why Use Access Control
- Access Control Benefits
- Access Control Features
- OAuth
- SWT
- Service Bus
- Enabling Hybrid Applications
- Relays in the Cloud
- Service Bus Features
- What is the Caching Service
- Latency Pyramid
- Demo: Service Bus
- Summary

Patterns and Scenarios
- Introduction
- Cloud Scenarios
- The Cloud
- Determine an ROI
- A Strategy for Migrating
- Common Scenarios
- Startups & POCs
- Data in Motion
- Moving to the Cloud
- Consider a Service Bus
- Scale
- Migration Strategies
- Considerations
- ASP.NET Design Patterns
- Summary

Diagnostics & Service Management
- Introduction
- Key Questions
- Diagnostics in the Cloud
- Diagnostics Engine
- How Does it Work
- Sources
- Loading the Diagnostic Agent
- Write to Trace Output
- Common Patterns
- Changing Config
- Remote Configuration
- Get the Current Configuration
- Log Filters
- Visualizing the data
- Schedule Transers
- Service Management API
- Deploying Services
- MOCP will Notify You
- In-Place Upgrades
- Upgrade Domains
- Deployment & Management Tools
- Windows Azure MMC
- Demo: Patterns & Scenarios
- Summary