
# How to be a Ninja

## Troubleshooting SQL performance on Azure Virtual Machines

Sourabh Agarwal | Amit Banerjee

# Thank You

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# Amit Banerjee Bio

Amit currently works as a Senior Program Manager with the SQL Server Product Group at Microsoft. In the past, he was a Senior Premier Field Engineer at Microsoft specializing in proactive and advisory assistance for SQL Server environments. In a previous role, he was also part of the SQL Server Escalation Services team at Microsoft. This involved fixing/troubleshooting complex issues related to SQL Server over a varied range of environments.


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# Sourabh Agarwal Bio

Sourabh has over 9 years of SQL experience and currently works as a Senior Premier Field Engineer at Microsoft, specializing in proactive and advisory consulting assistance for SQL Server and SQL on Azure environments. As part of the Microsoft India Services Team, he has worked on SQL Server environments for leading corporations in various business domains, helping them to design, deploy and support for mission- and business-critical applications.

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# AGENDA

Azure IaaS

Cheat Sheet

Demo

*Seishinteki kyōyō* – spiritual refinement

# AGENDA –SQL PASS Pre-Con

**How to be a Ninja: Troubleshooting SQL performance on Azure Virtual Machines [DBA-399-PM]**

## Deployment

Lift-and-shift

Workload discovery

Migration Automation

Ease of deployment

Automation templates

## Best Practices

Azure Storage

Azure Networking

SQL on Azure VMs

On-premises SQL Server

## Troubleshooting Performance

Azure VMs

Virtual Machines

On-premises

**OCTOBER 27th**

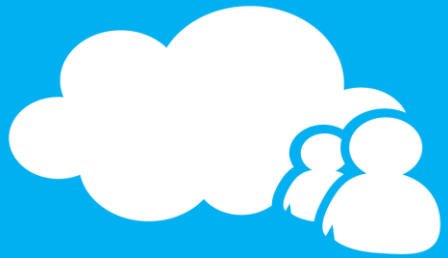
*Seishinteki kyōyō* – spiritual refinement

# WHY AZURE?

CAPEX vs OPEX

Compute, Storage, Network, Memory

Your Virtual Machine on-the-go



# What should we know?

## SQL Server

- DS3 or higher for SQL Enterprise edition
- DS2 or higher for SQL Standard edition
- Enable IFI
- Apply available performance fixes

## STORAGE

- Storage account and compute co-located
- Use 2 P30 disks for log and data
- Storage account in the same region
- OS disks not to be used
- Enable read caching on disks hosting data files and TempDB
- Striping gets better throughput

# Storage Cheat Sheet

- **Use **Storage Spaces** on Windows Server 2012 and above and OS striping for Windows Server 2008/R2
- Change **column count** to appropriately for your storage spaces configuration.

| Premium Storage Disk Type | P10 | P20 | P30 |
|---|---|---|---|
| Disk size | 128 GiB | 512 GiB | 1024 GiB (1 TB) |
| IOPS per disk | 500 | 2300 | 5000 |
| Throughput per disk | 100 MB per second * | 150 MB per second * | 200 MB per second * |

# Storage Cheat Sheet Contd..

- Do not store data on the temporary drive unless for TempDB and buffer pool extension on SSD drives
- **Separate data disks** for **data and log** files
- **Enable** read caching on the Data/TempDB drives.
- **Disable** caching on the Log file drive.
- Disable **GEO-replication** on storage account
- **64-KB allocation unit size** for data and log files as well as TempDB


# DEMO MAGIC

# SQL Cheat Sheet

- Use Lock Pages In Memory – Prevents paging to locally attached storage
- Disable autoshrink
- Enable instant file initialization
- Use database page compression**
- Backup to URL with compressed backups
- Move all databases to data disks, including system databases.
- Move SQL Server error log and trace file directories to data disks.


# DEMO MAGIC

# Takeaways

- Storage plays a big part in SQL performance on Azure VMs
- PowerShell is the tool for automation for pre-deployment, post-deployment and best practices check
- Evaluate using templates

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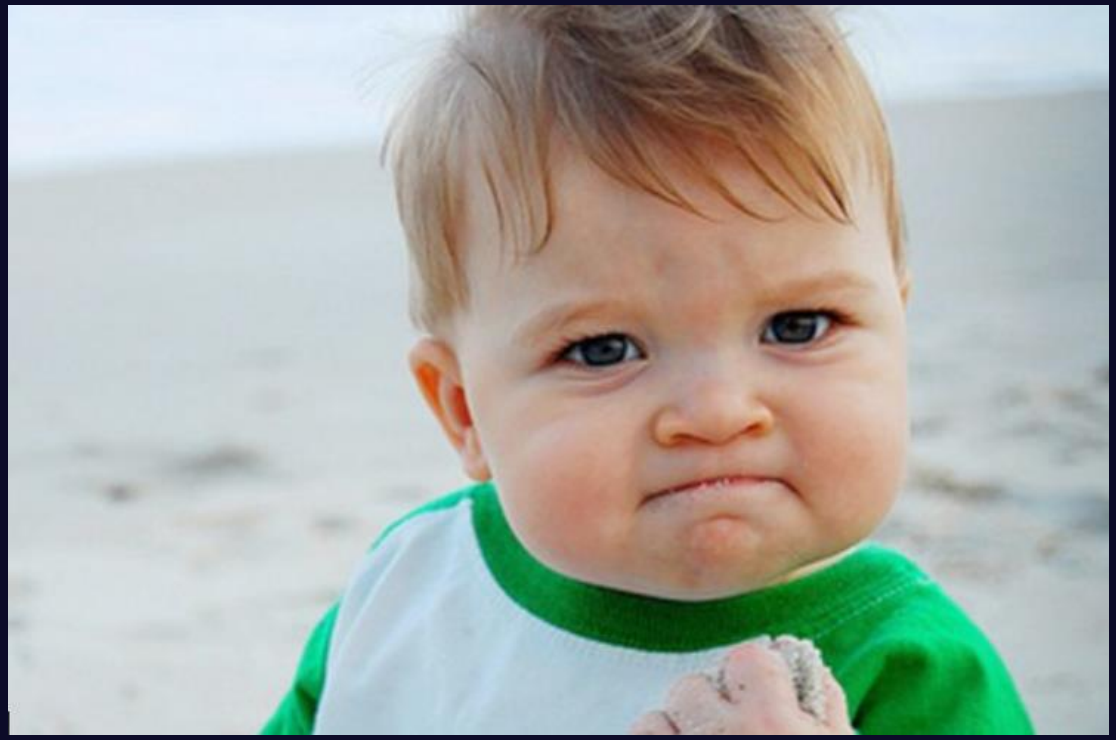
Do you feel like a NINJA apprentice yet?



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# Like What You've Heard?

Amit and Sourabh will be presenting at PASS Summit 2015!

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  - How to be a Ninja: Troubleshooting SQL Performance on Azure Virtual Machines

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