

Top 5 Things to Know @ SQL Azure

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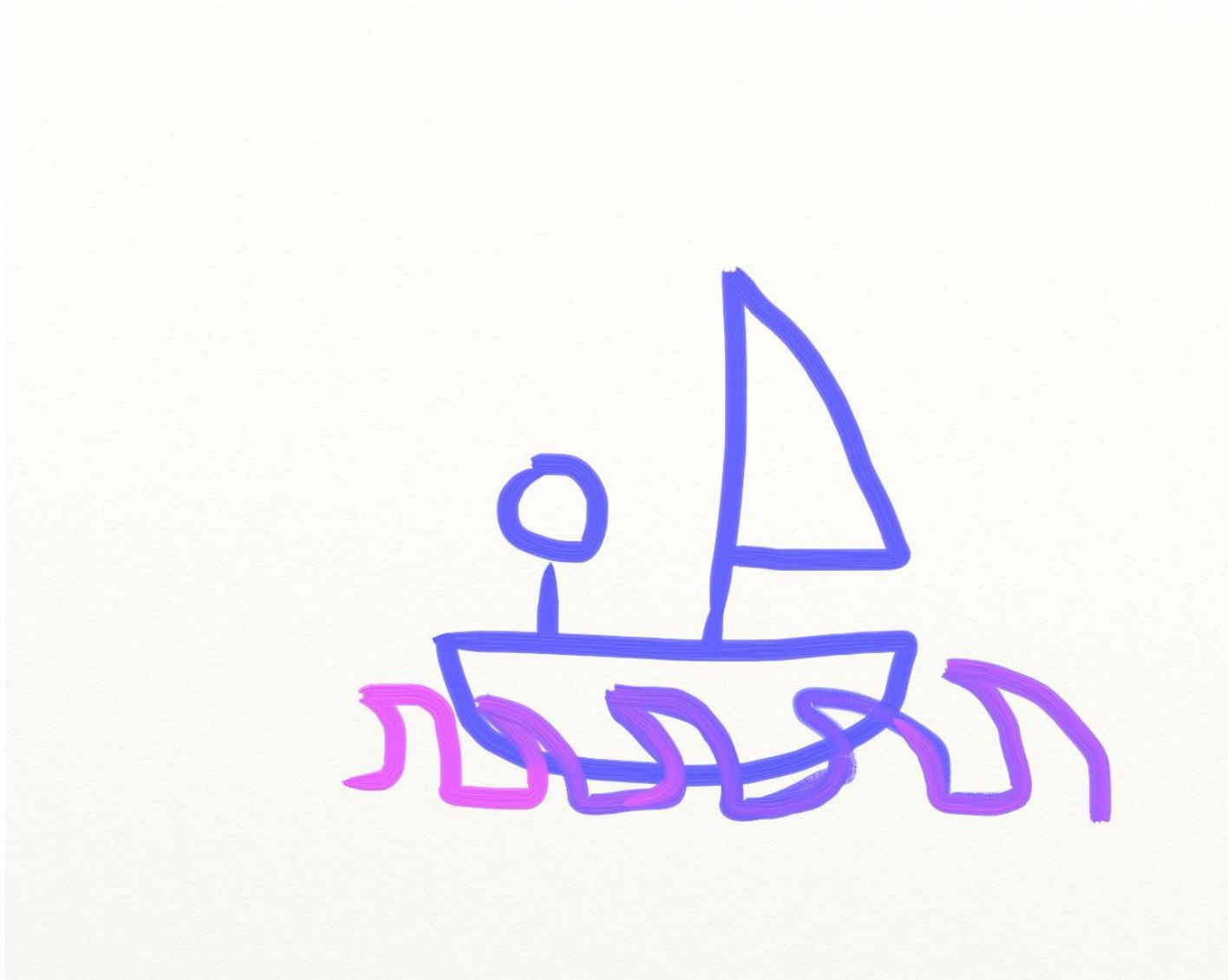


DEVELOPMENTOR

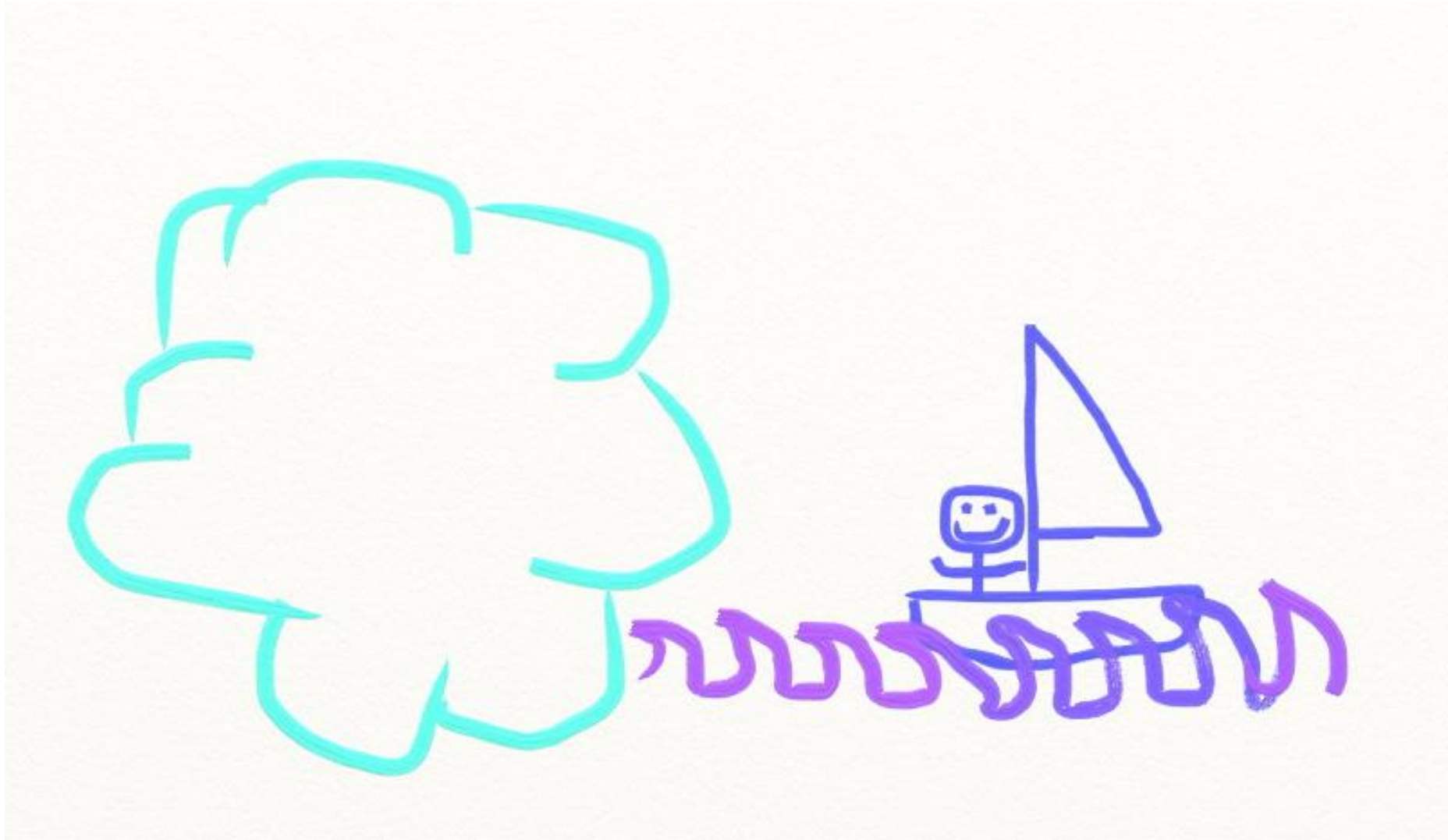
DEVELOPING PEOPLE WHO DEVELOP SOFTWARE







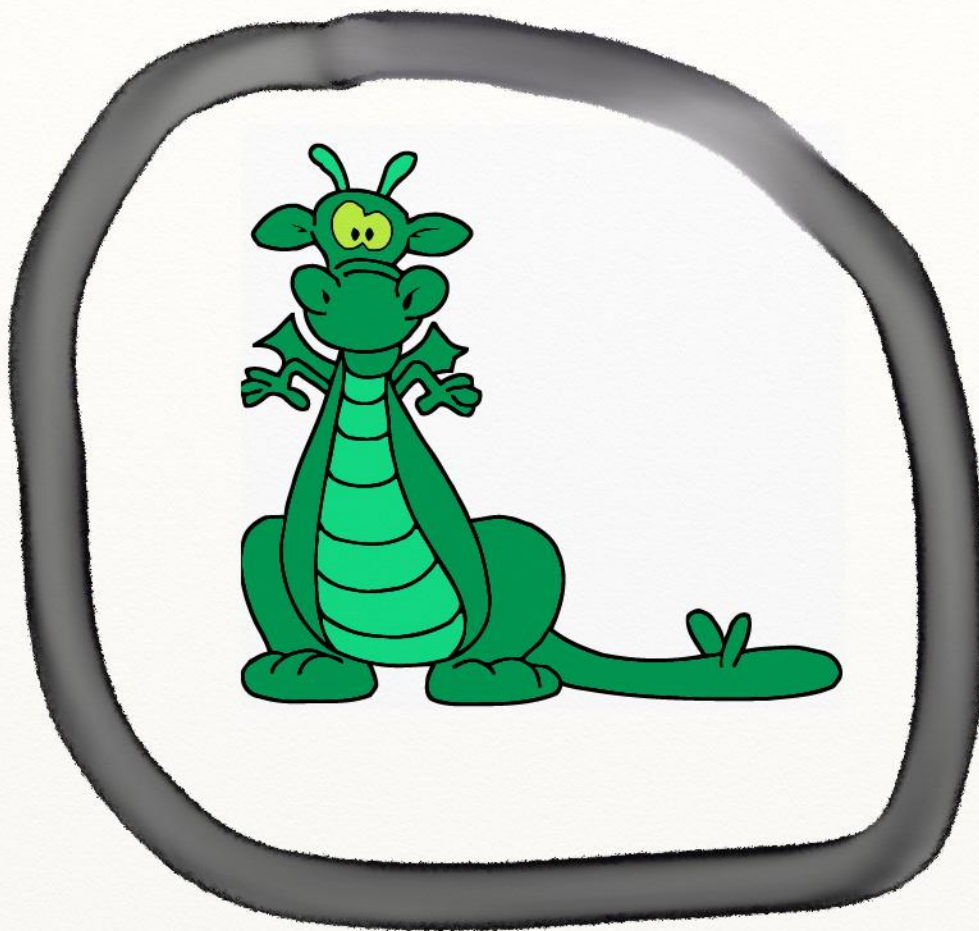


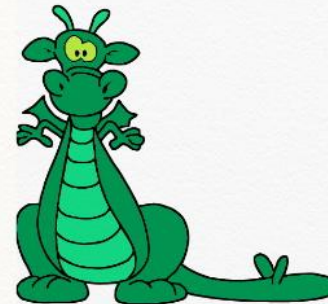
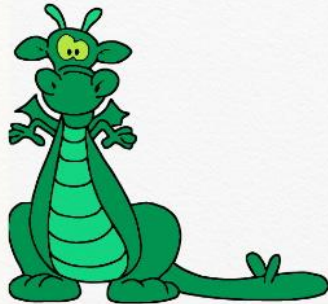
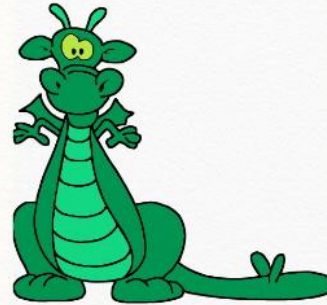
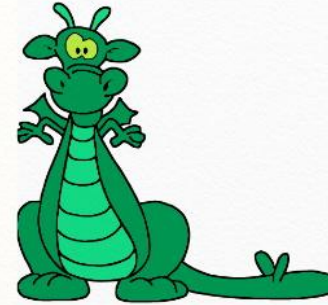
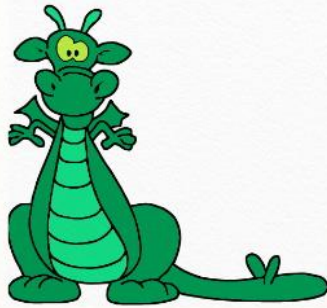


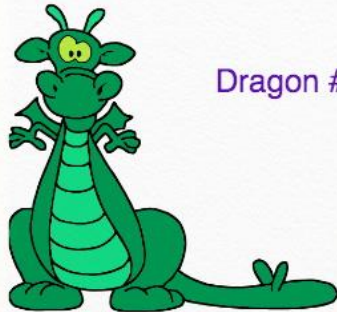




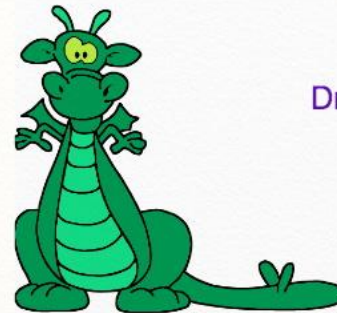








Dragon #1: `ConnectionString`



Dragon #2: New Errors



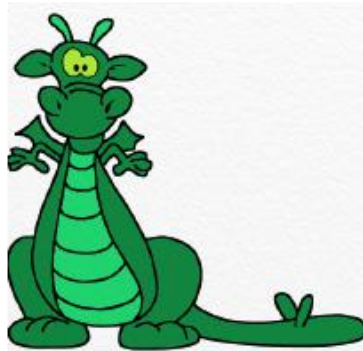
Dragon #3: Use Tooling



Dragon #4: Data Migration



Dragon #5: Performance

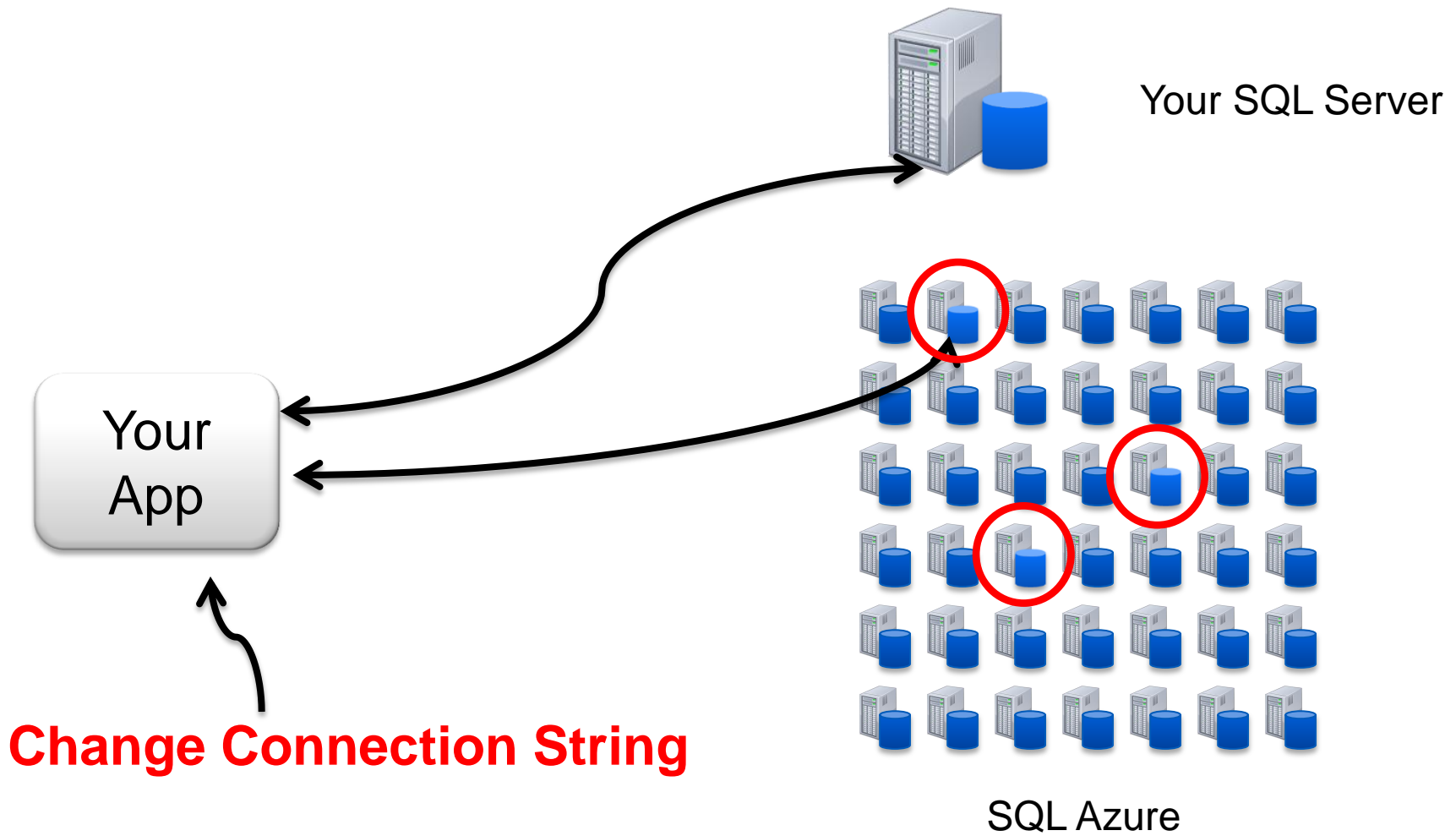


Dragon #1: The `ConnectionString`

Quick Demo: How to Sign Up

- **Free Accounts**

- BizSpark
- MSDN Subscription
- 30 day trial
 - Bing SQL Azure 30 day trial....there are coupons and instructions.
 - Look on the SQL Azure Team Blog
- Remember: Microsoft wants you to use this, there's a way to try it for free...



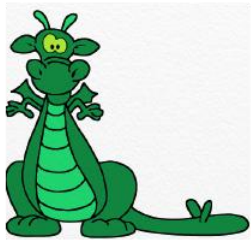
Change Connection String

5 Things Make Up a Connection String

- **What are they?**

5 Things Make Up a Connection String

- **What are they?**
 - UserName
 - Password
 - Database(Catalog)
 - ServerName
 - ProviderName



#1 ConnectionString

```
<add name="FlashcardEntities"  
connectionString="metadata=res://*/Models.FlashcardData.csdl|res://*/  
Models.FlashcardData.ssdl|res://*/Models.FlashcardData.msl;provider  
=System.Data.SqlClient;provider connection string=&quot;  
;Data Source=etnejn2aev.database.windows.net;Initial  
Catalog=flashcards;Integrated Security=False;User  
ID=***(username@servername);Password=*****;MultipleActiveRes  
ultSets=True  
;Encrypt=True(negotiated)  
;TrustServerCertificate=False&quot;;"  
providerName="System.Data.EntityClient" />
```

Connection Providers

- **Use ADO.NET, ODBC, PHP (NOT OLE DB)**
 - Client libraries pre-installed in Azure roles
 - Support for ASP.NET controls
- **Clients connect directly to a database**
 - Cannot hop across DBs (**no USE**)
 - May need to include <login>@<server>
 - Use familiar tools (sqlcmd, osql, SSMS, etc)
 - Use connection pooling for efficiency
- **SSMS 2008 R2 can connect**
 - <http://blogs.msdn.com/ssds/archive/2009/11/11/9921041.aspx>
- **SSRS, SSIS, SSAS can all connect to SQL Azure using the right provider.**

Typical ADO.NET Connection.Open()

*Courtesy of BartR – Microsoft

[http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-](http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+(MSDN+Blogs))

[retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+\(MSDN+Blogs\)](http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+(MSDN+Blogs))

```
try
{
    using (SqlConnection conn = new SqlConnection(sqlConnectionString))
    {
        using (SqlCommand cmd = new SqlCommand(sqlStatement, conn))
        {
            conn.Open();
            using (SqlDataReader dr =cmd.ExecuteReader())
            {
                while (dr.Read())
                {
                }
            }
        }
    }
}
catch (SqlException ex)
{
    SxpLog.WriteSqlException(ex, "some", "other", "data");
}
```

New Connection.Open()

*Courtesy of BartR – Microsoft

[http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-](http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+(MSDN+Blogs))

[retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+\(MSDN+Blogs\)](http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+(MSDN+Blogs))

```
string sqlContext = string.empty;
```

```
try {
```

```
    using (SqlConnection conn = new SqlConnection(sqlConnectionString))
```

```
    {
```

```
        using (SqlCommand cmd = new SqlCommand(sqlStatement, conn))
```

```
        {
```

```
            sqlContext = GetSqlContextInfo(conn);
```

```
            using (SqlDataReader dr =cmd.ExecuteReader())
```

```
            {
```

```
                while (dr.Read())
```

```
                {
```

```
            }
        }
    }
}
```

```
catch (SqlException ex)
```

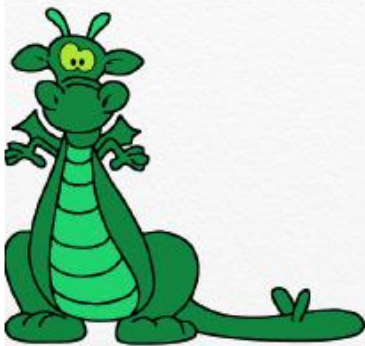
```
{
```

```
    SxpLog.WriteSqlException(ex, sqlContext, "some", "other", "data");
```

```
}
```

GetSqlConnectionInfo

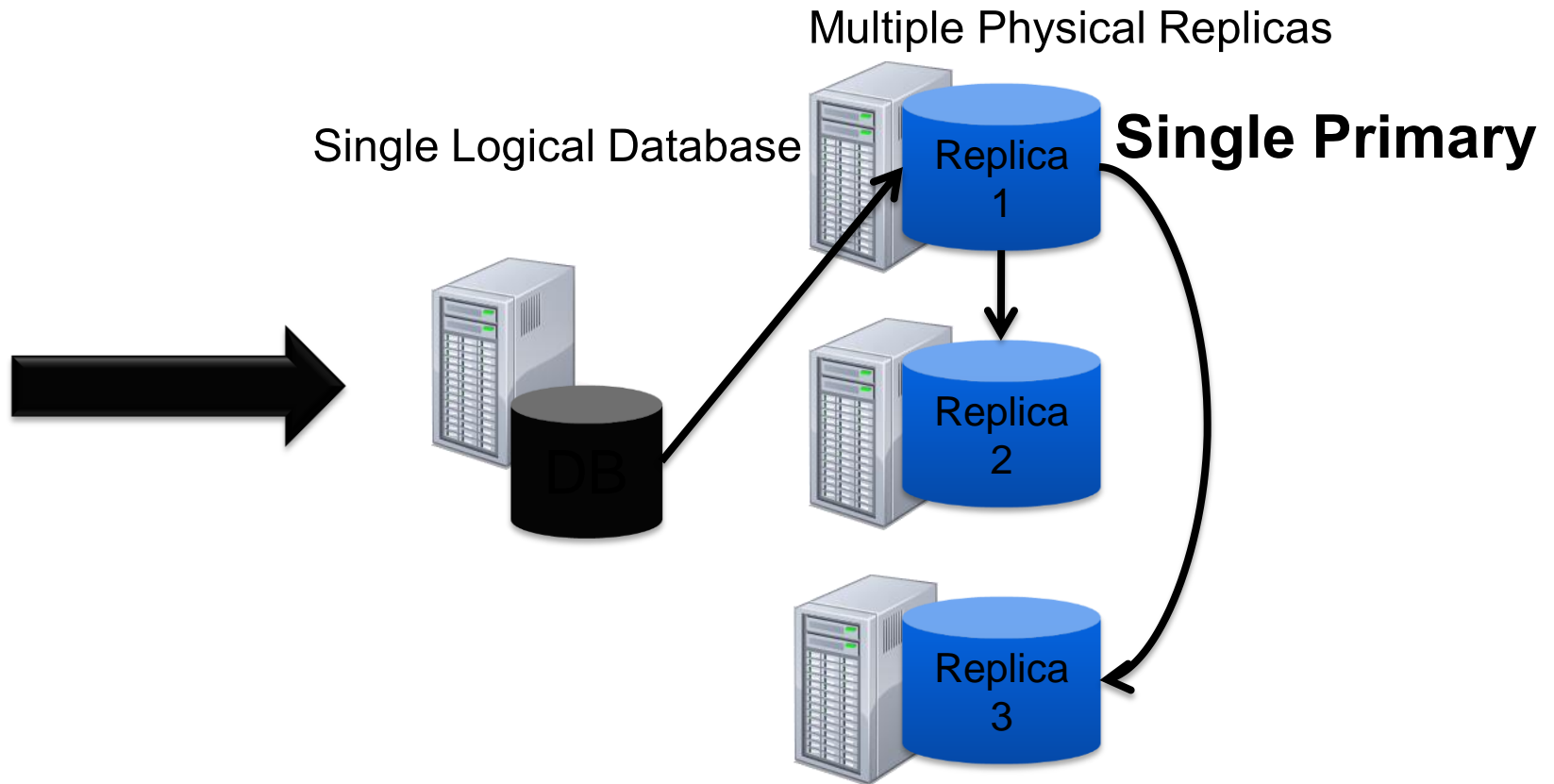
- [http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+\(MSDN+Blogs\)](http://blogs.msdn.com/b/bartr/archive/2010/06/18/sql-azure-connection-retry.aspx?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed:+Microsoft/MSDN-Blogs+(MSDN+Blogs))



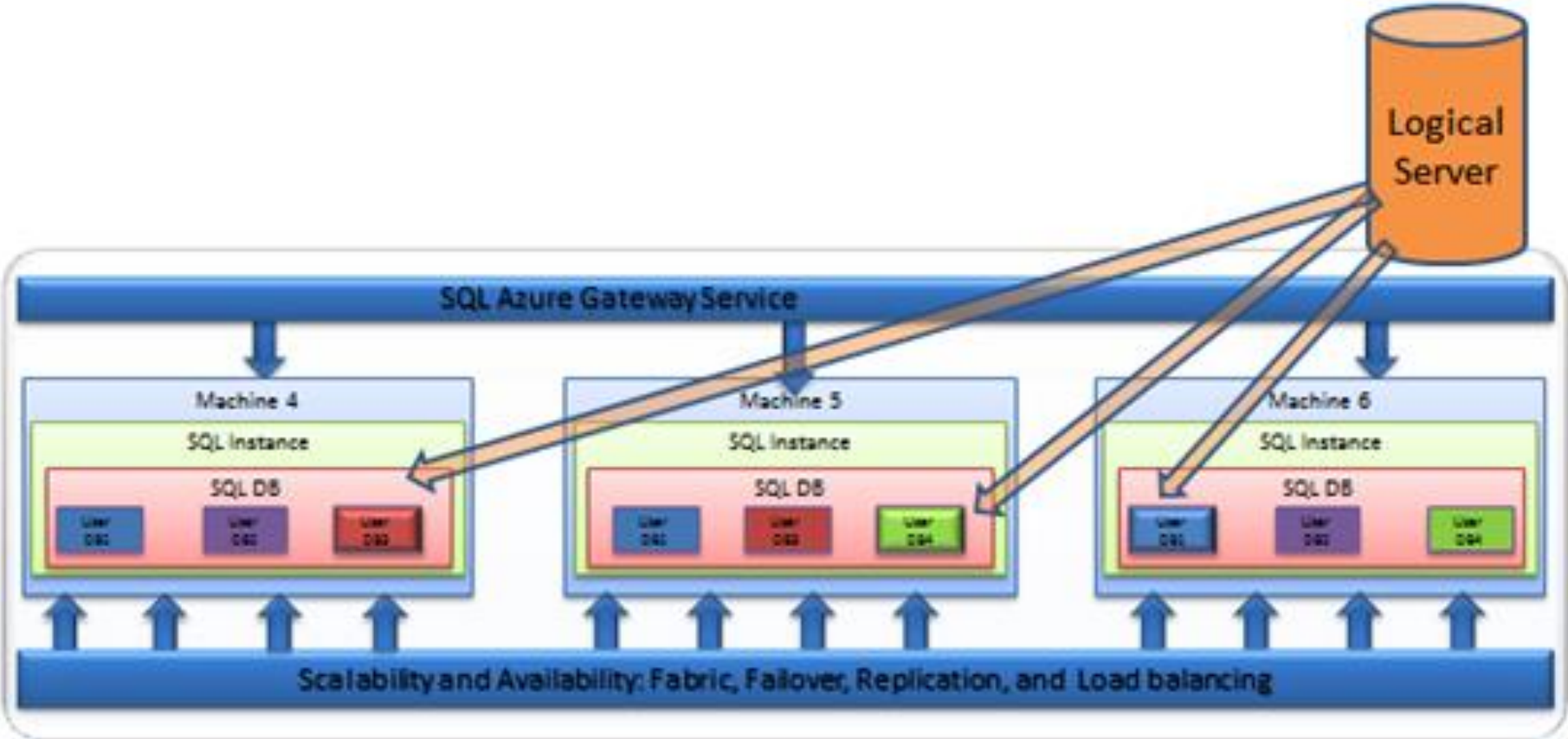
Dragon #2: Some New Errors

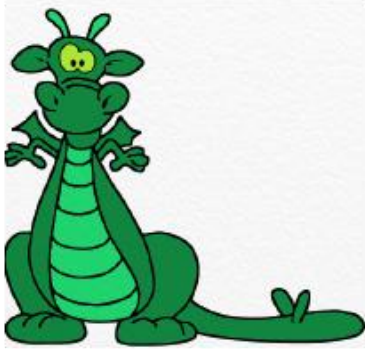
1. 40550 - Session has been terminated because it has acquired too many locks. Try reading or modifying fewer rows in a single transaction. (Greater than 1,000,000 locks)
2. 40551 - Session has been terminated because of excessive TempDB Usage(TempDB is only allowed to be 5GB in size)
3. 40552 - Session used too much of the transaction log. try modifying fewer rows in a single transaction. (Transaction consuming excessive log resources are terminated. The max permitted log size for a single transaction is 1GB)
4. 40544 - Database reached it's max size. Switched to read-only
5. 40553 - Session is terminated because of excessive memory usage. (Where there is memory contention, sessions consuming greater than 16MB for more than 20 seconds are terminated in the descending order of time the resource has been held)
6. 40549 - Session is terminated because of a long running transaction (SQL Azure kills all transactions after 24 hours.)
7. **40501 The service is currently busy. Retry the request after 10 seconds. Code: %d (SQL Azure might terminate the transactions and disconnect the sessions when the CPU utilization, input/output I/O latency, and the number of busy workers exceed thresholds.**

Another Reason We Need Retry Code = Disaster Recovery/Database Replicas



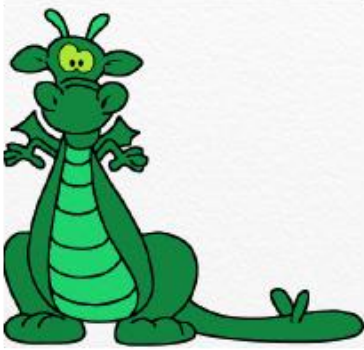
Logical/Physical Databases/Servers





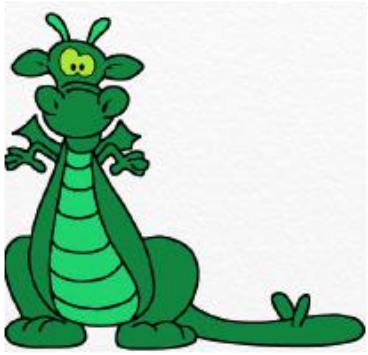
Dragon #3: Tooling

- **SQL Azure Database Manager**
 - Silverlight Tool
- **SSMS 2008 R2**
 - Standard Tool



Dragon #4: Database Migration

- **SSIS**
- **BCP**
- **SSMS – Generate Scripts**
- **DEMO: SQL Azure Migration Wizard**



Dragon #5: Performance Tuning

- Let's get this out of the way – What we don't have:
- no sql error log
- no sql profiler
- no pssdiag
- no bpa (best practices analyzer)
- no xevent
- no server side network capture
- no mps reports(microsoft product support reports)
- Only some DMVs

SQL Azure Performance Guide

- 1) Missing Indexes or better indexes
 - 1) Use DMVs
 - 2) Use Query Plans
- 2) Covering indexes for the WHERE clause
- 3) Can sorting be done on the client?
- 4) Minimize round trips
- 5) Limit records (paging)
- 6) Use Connection Pooling (open connection late, close them early)
- 7) Retry Logic (wait 10 seconds and then retry)
- 8) Catch errors and understand that when azure throws an error, the tran rollback
- 9) Caching and batching - evaluate caching and batching to limit round-trips to the server
- 10) avoid latency - choose a data center nearest to your location
- 11) Trace connections - traced connections using context_info() to troubleshoot connectivity issues
- 12) CALL SUPPORT**

What I Didn't Cover, But You Might Want to Research

- Pricing
- Included/Excluded Features
- Product Roadmap
- SQL Azure Reporting
- **Backup/Restore Options**
- SQL Azure Data Sync
- SQL Azure Odata
- Future Differences Between Editions

Good Resources

- **Inside SQL Azure – Kalen Delaney**
 - <http://social.technet.microsoft.com/wiki/contents/articles/inside-sql-azure.aspx>
- **SQL Azure & Entity Framework – Julie Lerman**
 - <http://msdn.microsoft.com/en-us/magazine/gg309181.aspx>
 - Doesn't cover the retry issue.
- **SQL Azure Team Blog & Twitter**
 - <http://blogs.msdn.com/b/sqlazure/>
 - Twitter: @sqlazure
- **My Site**
 - <http://www.ellisteam.net>
 - <http://ellisteam.blogspot.com>
 - Twitter: @EllisTeam1