Glossary

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Term	Definition
2FA	Two-factor Authentication. This is used to meet certain regulatory compliance standards (FISMA.) Because of these standards, connecting to SAWA clusters requires two methods of authentication; a username/password such as a domain account and a certificate stored on a smartcard.
Activity ID	This is a unique ID assigned to each connection established with the Windows Azure SQL Database service. It is assigned by the Gateway and can be used to trace a connection from open to close. Customers can retrieve this id by querying for their Context Info.
AM2	This is the abbreviation used to designate the Amsterdam data center. This data center is AutoPilot based.
Attention Wait Stats	Performance based timeouts (i.e. queries taking longer than 30 seconds by default) can be difficult to track. As such, Windows Azure SQL Database includes a new trace event in its SQL Trace tables called Attention Wait Stats. For each attention event, an entry will be made indicating the wait types encountered leading up to the timeout.
AutoPilot	Pre-SAWA clusters were rolled out using an AutoPilot technology. Thus, the early clusters/environments are considered AutoPilot environments instead of SAWA environments. All SQL Azure AutoPilot clusters reached end of life and have been decomissioned.
Backend	Azure environments are either front end or back end. Front end machines are effectively customer facing such as gateway machines that handle firewall rules. Back end machines actually host the sqlservr.exe process and run all SQL related actions. The vast majority of SQL Azure troubleshooting will involve backend machines.
BACPAC	This is the file format for the Import/Export service. It is a DAC (Data Tier Application) format. Thus, if you export your Azure database, you will have a BACPAC file.
BL2-1	This is the abbreviation used to designate the first data center in Blue ridge, Virginia. This data center's nickname is EAST US. It is SAWA based.
BL2-2	This is the abbreviation used to designate the second data center in Blue ridge, Virginia. This data center's nickname is also EAST US as customers should not know they are being re-routed to a new set of machines. It is SAWA based.

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BlackBird	This is another term for SAWA. It describes the method in which machines are rolled out.
Blob Store	A Blob Store is like a file share in the cloud. It is a "folder" or "drive" in which you can save files. In terms of SQL Azure, it is most often used to store BACPAC files.
Blocked Process Report	This is a trace event stored and available within the SQL Trace tables in MSDB. This event can show blocked queries, SQL handles, and servers. This helps diagnose extensive blocking situations post-mortem.
Bottleneck Analysis Report	Similar to the Bottleneck Analysis Report in SQL Nexus. This report is for the physical machine in the Azure environment. It shows overall statistics for the entire machine, not just a logical server.
BY1-1	This is the abbreviations used to designate the Bay (i.e. San Francisco) data center. It is SAWA based.
Catchup Sequence Number (CSN)	The CSN value is used in SE_REPL investigations. This number shows where along the process of "catching up" a secondary is in comparison to the primary. In terms of SE_REPL, the secondary with the lowest CSN value would be the slower secondary.
CH1	This is the abbreviation used to designate the Chicago data center. This data center's nickname is NORTH CENTRAL US. It is AutoPilot based.
CH1-2	This is the abbreviation used to designate the second data center in Chicago. This data center is SAWA based and is also called NORTH CENTRAL US.
Connection	Connecting in Windows Azure SQL Databases involves creating a connection request, passing through the Azure firewall rules, connecting through a gateway machine, and finally, being passed to the requested database's primary replica for further servicing.
Connectivity	Connectivity in Windows Azure SQL Databases involves multiple layers: Networking, Gateways, Firewalls, and Replicas. Reconfigurations, Failovers, and Throttling should all be checked in any connectivity issue.
Context Info	Each connection to Windows Azure SQL Databases is assigned a unique identifier much like a SPID. As there are multiple instances of SQL Server running, there could theoretically be multiple SPIDs with the same number. (i.e. User A on Server A could have SPID 103. User B on Server B could also

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	have SPID 103, just on a different server.) To distinguish between all connections, a unique identifier called the Context Info describes the context of each connection. Context Info is assigned by the Gateway and can be used to track a connection through all Azure layers. This information is translated into the Activity ID used in backend layers.
Dashboard	The Azure Dashboard reports known outage events and downtimes that affect multiple users.
Data Centers	Synonymous with Environments. A Data Center is a collection of physical machines that serve Windows Azure SQL Database clients.
Data Sync	A preview feature as of this writing, Data Sync is a method to keep two (or more) databases synchronized. The databases can be Azure/Box or Azure/Azure. Data Sync also allows inter-environment synchronization allowing customers to synchronize databases between two separate data centers. Data Sync is not currently supported in production. Forum support is the only available option at present.
Database Copy	Just as the name says, this feature creates a copy of the target database under a new name. This process can be tracked for performance and errors.
tabase Name	A logical construct that points to the customer's data. As each Windows Azure SQL Database is really a "partition" at present, this is a logical construct that is mapped to partition IDs by the service. Eventually, contained databases should allow true data files to be maintained for each database instead.
DB Backup	Windows Azure SQL Database does not support native SQL backups (bak/trn.) You can, however, export and import databases using the DAC-based Import/Export service.
DB3	This is the abbreviation used to designate the data center in Dublin. This is an AutoPilot based environment.
DMV	Dynamic Management View - same as on-premises.
DOS	Denial Of Service attack. This is a type of attack on web-based services where there is an attempt to overload the system. Our DOSGuards attempt to protect us from such an attack.
DOSGuard	This is a service/monitor that runs in efforts to monitor for and protect our servers from DOS attacks.

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Environments	Synonymous with Data Centers. An Environment is a collection of physical machines that serve Windows Azure SQL Database clients.
F5	Cisco load balancer used to balance traffic across nodes.
Failover	A failover occurs whenever a primary replica is demoted by another replica being promoted to the primary level. Failovers can be to existing secondary machines or newly created replicas.
Federation	federation is a way of grouping databases together into one larger logical construct. This is used by larger organizations to overcome the imposed limits of Windows Azure SQL Databases (i.e. 150 gigabyte maximum size.) Federations are comprised of "sharded" or "partitioned" databases. - At this point you cannot copy a database that contains federations by using the database copy operation. Conversely, creating a federation fails if a database copy operation is active in the database. Database copy cannot be performed on federation members either. From <http://msdn.microsoft.com/en-us/library/hh852669.aspx >
Firewall	Unlike a conventional firewall, Azure firewalls are machines that monitor connection requests on ports. If the requesting IP address is valid according to firewall rules that can be customized by each individual customer, the firewall allows the connection through. Unlike conventional firewalls, an Azure firewall does not block ports; the ports will still show as open. Connections are allowed or prohibited based upon IP addresses.
Firewall Rule	This is an individual rule created typically by the Azure portal or the sp_addfirewallrule stored procedure. Firewall rules list a specific IP address
FISMA	This is a regulatory compliance standard to which SAWA attempts to adhere. It is this standard that requires 2FA and, therefore, smart card authentication to SAWA based clusters.
Frontend	Azure environments are either front end or back end. Front end machines are effectively customer facing such as gateway machines that handle firewall rules. Back end machines actually host the sqlservr.exe process and run all SQL related actions. The vast majority of SQL Azure troubleshooting will involve backend machines.
Gateway	A Gateway machine is a physical computer residing in the Front End layer. This machine listens for and accepts new incoming connections. It then

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	does login work and attempts to locate the Primary replica of the database requested by the login. Once the Primary has been found, the Gateway machine will hand-off the connection to that Primary, thus finishing the connection process.
High key	Similar to a Low Key value, this is a unique identifier of a database. It represents the unique high-range for a database. (Effectively, think of this as the highest offset a database could have.)
HKN	This is the abbreviation used to designate the data center in Hong Kong. It is AutoPilot based.
HTTPRequest Query Tool	One of the most powerful tools in the SQL Azure troubleshooting arsenal, this tool allows you to run custom T-SQL based queries against Azure backend machines. This tool is part of the larger XTS suite of tools.
IAAS	Infrastructure As A Service. This service offers cloud-based virtual servers with Windows operating systems installed. You can use these virtual machines as you would any other virtual machine. You can install SQL Server, etc.
Incident ID	Usually used in conjunction with a throttling event, this ID is specific to the throttling event that occurred. By analyzing events with this ID, you can ascertain what triggered a throttling situation.
IP Address	This is the public address with which a customer connects through the Azure firewall. The management portal will display the public address for easy rule management.
Job	A Job in Windows Azure SQL Database is effectively any database level DDL statement such as Create, Alter, or Drop.
Job Framework	The Job Framework processes internal "Jobs" which include Create, Alter, Drop, and Resize commands on the database level. (Technically, the Resize command is an ALTER DATABASE command, but it happens frequently enough to, in my opinion, deserve its own listing here.)
Load Balancing	In any shared service such as Windows Azure SQL Databases, performance is a great concern. Our Load Balancing technologies allow us to move customers to less busy machines and route new connections and new databases to less busy machines as well. A customer is subject to a load balancing move at any point in time. When load balancing occurs, connectivity is interrupted as this is a type of reconfiguration. Customers should implement retry logic into their applications so that interrupted

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	commands can be retried automatically once load balancing operations are complete.
Local Partition ID	A non-unique number roughly equivalent to the concept of a Database ID on-premises. This ID details a specific partition while it remained on the specific physical machine in question. This ID is used in troubleshooting Throttling conditions.
Logical Server	Each Windows Azure SQL Database server is assigned a unique name consisting of a random combination of letters and numbers. This identifier is the customer's "logical server" in terms that it is not a true physical server but rather a subset or portion of a physical server shared by other logical servers. Effectively, at present, a logical server is a schema as all servers and databases are contained as partitions with the same parent database and server. This is changing to reflect "contained databases."
Low key	Similar to a High Key value, this is a unique identifier of a database. It represents the unique low-range for a database. (Effectively, think of this as the lowest offset a database could have.) This particular key is used to identify a database across a variety of queries and views. Thus, it is the best analogue for the on-premises "Database ID" that exists in the Windows Azure SQL Database world.
Ops Ticket	The operations team accepts tickets known as RD Incidents through a TFS/VSTS server. This team handles hardware based investigation and can provide Windows-level information in support cases. This team is *NOT* to be used to diagnose SQL or SQL Connectivity issues.
OpStore	The primary database on Azure machines. This database has tables that store information about every machine in the cluster. There is one OpStore for the entire environment. As such, it is sharded/partitioned. Thus, doing a "TOP 10" query may actually return 50 results. This is because the query gets the top 10 rows across all partitions that fit the definition of the query.
Outage	A true outage affects multiple users even though an individual customer may refer to a downtime they experienced as an outage. Our SLA is one successful connection attempt within a five minute window. True outages that affect multiple users will be posted on the Azure Dashboard. It is at Microsoft's discretion what is and is not posted to the dashboard.
Partition ID	Unlike a local partition id, the true partition id is unique and consistent across all physical servers. It is calculated using a combination of the high

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	key and low key values. This value is much less often used than the low key individually.
Partition Stats	The DMV dm_cloud_local_partition_stats_history shows customer-facing information including database and data object sizes.
Partitioning	Partitioning, in the same sense as sharding, occurs when data is separated into different databases based upon business defined rules. This is used in Federated databases so that data flows into the appropriate database depending upon which shard it falls under.
Perfmon Counters	Just as in on-premises, Perfmon Counters will show the overall health of the physical server. It will not show customer-specific information.
PerfStats	PerfStats is a script taken from the PSSDiag code to capture similar information from Windows Azure SQL Databases.
Portal	The Azure Portal is used to manage accounts. The SQL portion of the Portal is used to manage SQL servers and databases in the cloud. The Portal is effectively a web-based version of Management Studio.
Primary	The Primary Replica is the physical machine that serves database requests for the server/database in question. Primary replicas are shared with other customers and can have other primary copies of a database as well as secondary copies of other databases. (A secondary copy will never be on the same machine as the primary for the same database.)
PSSDiag	PSSDiag cannot be used in its native form in the cloud. As such, certain SQL scripts were extracted from it and placed on the wiki to run instead. This PSSDiag for Azure is also commonly referred to as PerfStats.
Query Stats Over Time	This script saves incremental snapshots of DMVs based upon a where clause. This Where clause can be set to save long running queries or blocked/head-blocker queries.
Query Tool	In Verona, this tool allows you to run custom T-SQL based scripts against backend machines.
RD Incident	When filing an Ops Ticket, you choose an "RD Incident" as the ticket type. This is an incident to which the Ops team will respond.
Reason Code	When a connection is throttled, a throttling error code is returned. Along with that error code will be a "Reason Code" in the text of the error message. This code can be decoded using a variety of methods (i.e. a SQL

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	Script, an executable tool, PowerShell) to determine what type of throttling occurred and on what resource.
configuration	A reconfiguration is any movement of any replica. For example, a secondary replica being replaced by another secondary replica. A failover is also a type of reconfiguration. Reconfigurations can happen for a variety of reasons including failovers, failures, load balancing, etc. Customers should account for these by implementing retry logic in their applications.
Replicas	A replica is machine that hosts a synchronized copy of a customer's database. There are Primary and Secondary replicas. Replicas are not backups as they are synchronized. You cannot "restore" a database from a replica if a user makes a mistake.
SAWA	SQL Azure on Windows Azure. This is a type of deployment on newer Azure clusters/environments. This type of deployment complies with certain security standards and will be used in the foreseeable future on new environments. Older environments, called AutoPilot environments, will eventually be phased out.
SE_REPL	Secondary Replication wait types. These waits indicate that at least one of the secondary machines is slow to harden or acknowledge transactions.
Secondary	A Secondary Replica is a physical machine that hosts a copy of the server/database in question. It does not serve data requests. A secondary machine is shared by other users and can serve as either Primary or Secondary for those other users' databases.
SGP	This is the abbreviation used to designate the data center in Singapore. It is AutoPilot based.
Sharding	In the same sense as partitioning, sharding occurs when data is separated into different databases based upon business defined rules. This is used in Federated databases so that data flows into the appropriate database depending upon which shard it falls under.
SLA Violation	Our SLA is one successful connection attempt within a five minute window. In addition, there are NO performance SLAs or guarantees. Speed of imports and exports is often not investigated because such is internal and will take as long as our service wants it to take. (Stuck requests are investigated.)
SN1	This is the abbreviation used to designate the San Antonio data center. It is

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	AutoPilot based.
Subscription ID	This is a unique ID assigned to each customer. A customer can have multiple SQL servers as well as multiple databases. Although it is theoretically possible to map servers to users by their subscription ID, it is often much easier to simply ask the customer for their logical server name.
Table Storage	This is a service offered by the Windows Azure team. It is much like a shared Excel spreadsheet that is backed by blob storage. Table storage is effectively a spreadsheet, i.e. one table, with no relationships to other tables.
TFS	Team Foundation Server. We use this to file RFCs and Ops Tickets through Visual Studio.
Throttling	Throttling, at present, is a true disconnect of a connection. If a user attempts to over-utilize a system's resources, the connection is subject to throttling. When throttled, an error message is returned to the client and the connection is terminated. The error message will contain a Reason Code for the throttling event. It will also contain an Incident ID, much like an Activity ID, that can be used to trace the throttling event. Throttling can be on a host of resources but will either be SOFT (applying only to the connections that are suspected of causing the problem/resource consumption) or HARD
Verona	This is a graphical, web-based utility used to troubleshoot and diagnose SQL Azure issues. It contains "scenarios" for efficient troubleshooting purposes. Verona was retired in 2014 and is no longer in use by support.
VIP	Virtual IP address used on load balancing many machines behind one IP address used by clients to connect.
WASD	Windows Azure SQL Database
Watchdog	A Watchdog is similar to a scheduled task or service in Windows. These services monitor for various conditions such as a full transaction log file, low memory, etc. Watchdogs can then raise alerts so that the operations team takes action or they may take automatic action depending upon their design.
XTS	XTS is a text-based utility used to troubleshoot and diagnose SQL Azure issues. It contains "views" for efficient troubleshooting purposes.

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