

CenturyLink Service Guide

Database Server Software 1.0: Managed Microsoft SQL Server

This Service Guide (“SG”) sets forth a description of the Database Server Software 1.0: Managed Microsoft SQL Server offered by CenturyLink, including technical details and additional requirements or terms. This SG is subject to and incorporated into the Agreement and Hosting Service Schedule between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant Service Order. For avoidance of doubt, any references in the Agreement, Schedule, or Service Orders to SSG, shall mean SG.

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Overview

Database Server Software 1.0: Managed Microsoft SQL Server (MS-SQL) is a Managed Hosting product. The standard "Service" consists of the licensing, installation, configuration, administration, monitoring, maintenance and support for software components.

The Managed Hosting SLA applies to this Service.

Customer chooses the Database edition, version and options at the time of purchase. Licensing of the Database Software can either be provided by CenturyLink or obtained by Customer.

Supported Editions, Versions, Platforms and Operating Systems

See [Managed Database Services Compatibility Matrix](#) or navigate to <https://wwwctl.io/legal/managed-hosting/db-compatibility-matrix/> from any Internet browser.

Access

Customers are given full administrative control to Managed Microsoft SQL Server. CenturyLink shall not be liable for any failure to perform in the event of Customer's error.

Monitoring

CenturyLink will enable application level monitoring for each environment as they are created within the product configuration. CenturyLink will retain primary notification and resolution responsibilities for all automated environment alerts. A Customer technical contact will be engaged to perform primary resolution of incidents associated with a non-production level environment.

Maintenance and Support

- **Change Management:**

All changes to the CenturyLink managed applications, systems, network and facilities are subject to CenturyLink's change management process. This process is intended to confirm that work is reviewed for completeness (risk assessment, completed test procedure, metrics for measuring progress, back out procedure, etc.) and accuracy prior to scheduling and implementation.

- **Major and Minor Releases:**

Major and Minor Releases are upgrades and require a new installation of the Software binaries, which is not included in this Service. As a commercially reasonable practice, it is suggested that Customer purchase a new managed server (via a Service Order) and purchase migration services (via a Statement of Work). Customer should contact their sales representative to determine their upgrade options.

- **Patch Releases:**

Due to the level of integration some Customer Environments have with Microsoft SQL Server, CenturyLink prohibits Microsoft SQL Server from being patched on a regular basis. CenturyLink does test and approve patches for Microsoft SQL Server, but CenturyLink relies on Customers to determine what service pack level is required and compatible with their Environment. CenturyLink does proactively notify and schedule patching for any security vulnerabilities that may be identified, but CenturyLink will not do the same for service packs or updates unless requested to do so by the Customer. Any outages directly caused by Customer's failure to accept the implementation of a critical patch will not be subject to SLA service credits.

- **Maintenance Windows:** CenturyLink will use commercially reasonable efforts to perform routine maintenance during defined maintenance windows. See our published [Maintenance Window schedule](#), or navigate to <https://www.ctl.io/legal/managed-hosting/maintenance-windows/> from any Internet browser. CenturyLink has the right to perform scheduled maintenance (during the windows specified), which may limit or suspend the availability of the Services. CenturyLink shall provide Customer with at least ten (10) days prior notice of any scheduled maintenance activities. In addition to providing written notice, CenturyLink maintenance notifications are available on the SavvisStation customer portal.

- **Support:**

CenturyLink will provide support for the Service during installation, content migration, Customer validation, and 24x7 monitoring and management by the CenturyLink Service Center after installation.

Optional Services

At Customer's option, Customer can choose any of the following additional services. Certain services are provided for an additional fee. These additional services are available only if Customer has purchased Database Server Software 1.0: Managed Microsoft SQL Server, and additional terms and conditions may apply.

AlwaysOn Availability Groups

A service for configuring and managing MS-SQL AlwaysOn Availability Groups. This add-on service supports up to a five node (1 primary/4 secondary) Availability Group in MS-SQL 2012 and a 9 node (1 primary/8 secondary) Availability Group in MS-SQL 2014 and 2016. MS-SQL AlwaysOn Availability Groups is only available for MS-SQL Enterprise Edition.

Microsoft Database Mirroring

A service for configuring and managing local or remote database mirroring. Local mirroring requires the primary and replicant databases to be housed within the same data center and can be provided on MS-SQL Standard Edition or MS-SQL Enterprise Edition. Remote mirroring allows the replicant database to be housed in a different data center than the primary database and is only available with MS-SQL Enterprise Edition.

Microsoft Database Snapshots

A service used for configuring and managing local MS-SQL database snapshots. Snapshots are scheduled for every 4 hours by default, but can be adjusted to any hourly schedule. The snapshot provides a read-only copy of the database from a point-in-time on MS-SQL Enterprise Edition only.

Failover Clustering

Also known as AlwaysOn Failover Cluster Instances, a service used for configuring and managing a MS-SQL Failover Clustering. This service supports up to a 16 node cluster for MS-SQL Enterprise Edition and a 2 node cluster for MS-SQL Standard Edition and is only available on the Intelligent Hosting Platform.

Integration Services

SQL Server Integration Services (SSIS) for extraction, transformation and load (ETL) provides greater uptime, performance, and enhanced security features for OLTP and data warehouse workloads.

Reporting Services

SQL Server Reporting Services (SSRS) for web based reporting is a server-based reporting platform that supports report authoring, distribution, management, and end-user access.

Analysis Services

SQL Server Analysis Services (SSAS) OLAP for cube analysis helps build comprehensive, enterprise-scale analytic solutions with integration into the .NET Framework. Many new features extend the data mining and analysis capabilities of Analysis Services.

RELATED CUSTOM SERVICES

The following related custom services may be purchased separately. These services can't be delivered in a standard manner as defined in this Service Guide. Instead, they can be requested through your CenturyLink sales representative for consideration of delivery through a CenturyLink statement of work (SOW) under a separate service agreement.

Dedicated Database Administrator

Customers that do not have a Database Administrator (DBA), can purchase this resource by enquiring with their Sales Representative.

CenturyLink Responsibilities

Licensing

- Maintain licensing and Software maintenance with Microsoft for CenturyLink provided licenses

Installation

- Prepare server for application service (OS specific parameters)
- Configure Failover Clustering when purchased for Microsoft SQL Server installation

- Install Microsoft SQL Server (including available options and features)
- Install applicable Microsoft SQL Server Service Packs
- Harden Microsoft SQL Server to CIS Level 1 and CenturyLink standards
- Install CenturyLink Monitoring
- Perform quality assurance against Microsoft SQL Server installation/hardening

Configuration

- Create/Configure Microsoft SQL Server service accounts and SPNs
- Configure supported protocols (TCP/IP, Named pipes, TCP Port, IP Address and SSL Certificate allocation)
- Configure login auditing
- Configure Database Mirroring, snapshots and/or Always On, if purchased
- Configure CenturyLink Monitoring
- Configure CenturyLink approved and provided database backups and maintenance jobs

Administration

- Rebuild broken database mirrors or AlwaysOn availability groups and Failover Cluster nodes, if purchased
- Perform database backups and restores; limited to managed backup services
- SQL Server log monitoring
- Restart/stop/start services
- Update managed servers with all recommended security patches, service packs and hot-fixes upon customer request
- CenturyLink utilizes CIS Level 1 security benchmarks and NIST for additional security standards when deploying the Service and will provide security policies for the Service upon request.

Maintenance and Support

- Coordinate patching with Customer during maintenance hours
- Perform incident related failover/failback of AlwaysOn, Database Mirrors or Failover Clustered Instances, if purchased

If a customer requires any additional services, including the custom related services noted above, which are not explicitly included as either the standard Service or optional services in this SG, they should contact their sales representative for assistance and information.

Customer Responsibilities

Customer acknowledges and agrees that its failure to perform its obligations herein may result in CenturyLink's inability to perform the Services and CenturyLink shall not be liable for any failure to perform, including any SLAs in the event of Customer's failure. CenturyLink shall not be liable for any failure to perform in the event Customer does not fulfill Customer's responsibilities and requirements as detailed herein and in the event of Customer's errors or omissions in setting up the environment. In addition, CenturyLink is not responsible for any loss or corruption of data or information. CenturyLink's obligations related to data are exclusively governed by the Security and Compliance section of the applicable Agreement.

Licensing

- **If CenturyLink-provided:** If any third-party software, including any corresponding documentation, is provided to Customer by CenturyLink in connection with the Service, Customer agrees to be bound by any additional licensing terms and conditions applicable to such third-party software and that it will use such third-party software strictly in accordance with such terms and conditions. CenturyLink makes no representations or warranties whatsoever with regard to such third-party software.
- **If Customer-provided:** If provided by Customer, Customer may obtain, and maintain throughout the Service Term, the required Software licenses. If Customer chooses to obtain the licenses, CenturyLink will install the Software as part of the Service provided Customer secures and grants the applicable accesses to CenturyLink to allow CenturyLink to perform the Service. Customer shall at all times comply with any and all end user license agreements related to the Software. Customer represents and warrants that a written license agreement exists with the License vendor that permits CenturyLink to perform activities described in the proceeding sections. Customer agrees to provide CenturyLink with evidence of licensing as requested prior to the deployment date and periodically as requested to update the status of the license. If Customer fails to provide the license agreement, CenturyLink may, at its option, delay the deployment date or terminate the Agreement.

Configuration

- Configure database mail, Reporting Services, Analysis Services, Notification Services, distributed transaction coordinator, service broker and/or integration services
- Deploy Customer database(s)
- Configure CDC, master data services, extended events, FileStream, CLR or resource governor
- Configure database log shipping and/or replication

- Configure database encryption using TDE
- Data validation, user acceptance testing (UAT), site acceptance testing (SAT)

Administration

- Maintain Customer database(s)
- Customer database packaging
- Encrypt data within database(s)
- Managed table and index partitioning
- User identity and access management
- Manage database encryption keys

Maintenance and Support

- Analyze database performance, concurrence, lock and durability issues

Acknowledgements and Consent

1. **Third-Party Components:** Customer acknowledges that all third-party components of the Service are subject to the applicable vendor's decision to (i) not continue to provide or renew the Service with CenturyLink and/or (ii) modify or end of life a component(s). If any of the foregoing occurs, CenturyLink will use commercially reasonable efforts to migrate Customer to another comparable CenturyLink service at any time. Such migration will occur without regard to Customer's current term.
2. **Provide Contact:** Designate and maintain a Customer Contact during the service term and any applicable renewal term (including current contact information). "Customer Contact" means a technical point of contact with sufficient knowledge, authority and access to address configuration issues, event notifications, system or infrastructure modifications and authentication of applicable systems.
3. **Security Precautions:** Neither Customer nor its representatives shall attempt in any way to circumvent or otherwise interfere with any security precautions or measures of CenturyLink relating to the Service or any other CenturyLink equipment.
4. **Supportability:**
 - a. Customer acknowledges and agrees that it is solely responsible for selecting and ensuring its software and systems are up to date and supportable.
 - b. Customer further acknowledges it is solely responsible for ensuring all devices and hardware are upgraded to meet vendor configurations and agrees that CenturyLink's SLA only applies to currently supported configurations (including but not limited to related devices, software, and operating systems) at the time SLA support requests are triggered.

If any configuration or version is identified as “unsupported” by a vendor, the Services are subject to all of the following conditions and/or requirements: (i) a service level objective (“SLO”) referring to CenturyLink’s reasonable effort to provide support will apply in lieu of any other applicable SLA and will automatically apply from the time CenturyLink receives notice from the vendor of such unsupported service; (ii) CenturyLink, in its reasonable discretion may elect to charge the Customer for any support or additional tasks/work incurred by CenturyLink resulting from Customer’s continued use of unsupported configuration until Customer purchases the required and supported upgrades or extended support at an additional cost from the vendor. The requirement to purchase upgrades or extended support from vendor shall apply at any time, regardless of any contract term, term commitments, or renewal periods. Customer’s failure to do so may result in CenturyLink’s inability to provide the Services and CenturyLink shall have no liability therefrom.

- c. CenturyLink is not responsible for the service or the SLA if any changes by Customer affect the infrastructure or monitoring capability of CenturyLink.

5. Data Transfer:

- a. Customer consents to CenturyLink’s and its affiliates or subcontractors’ use and transfer to the United States, or other countries, data or information (including Customer Contact information such as names, phone numbers, addresses and/or email addresses) of the Customer for the sole purpose of: (i) fulfilling its obligations under the Agreement; and (ii) providing information to Customer about CenturyLink’s products and services. Customer represents that it will ensure that all information provided to CenturyLink is accurate at all times and that any business contact has consented to CenturyLink’s processing of such information for the purposes identified herein.
- b. Customer consents to CenturyLink collecting and compiling system and operational metrics data to determine trends and improve service capabilities. CenturyLink may associate this data with similar data of other Customers so long as such data is merged in a manner that will not in any way reveal the data as being attributable to any specific Customer. Customer acknowledges CenturyLink’s access to Customer data is generally limited to machine/system generated information and/or metrics, however if required as part of CenturyLink’s obligation to provide the Service, or requests by Customer, CenturyLink may have access to Customer data, including personal information.

Monitors

Monitors for Microsoft SQL Server Service

Monitor	Description	Frequency
MS-SQL Error Log	The MS-SQL error log is polled for errors and failures	Instant
Windows Event Log	The Event log is polled for MS-SQL Server errors	Instant
MS-SQL Server Service	The MS-SQL Server Service is not running	1 Minute
MS-SQL Agent Service	The MS-SQL Server Agent Service is not running	1 Minute
MS-SQL SSIS Service	Alarms if the MS-SQL SSIS Service is not running	1 Minute
Database Unavailable	Alarms when a database is not online	5 Minutes
Blocking	Alarms on any SPID is blocked by another SPID or a Full Scan	10 Minutes
Failed SQL Job	Alarms on any CenturyLink managed SQL job with a failure status	15 Minutes
Database Last Backed Up	Alarms when a database has not been backed up in the past 24 hours or more.	15 Minutes
Database File Free Space	Alarms when a database's data or log files percentage of free space is below X. Only applies to databases that are not set to auto grow.	15 Minutes
MSSQL Failover Cluster Instances and Availability Groups	Alarms for health of cluster service, cluster errors, non-user-initiated failovers or Availability Group errors	1 Minute

Monitors for Microsoft SQL Database Mirroring

Monitor	Description	Frequency
Log Send Queue Size	Alarms when the Log Send Queue size is above 256MB	5 Minutes
Redo Queue Size	Alarms when the Redo Queue size is above 256MB	5 Minutes
ACK Latency	Alarms when the ACK Latency time is above 700 ms	5 Minutes
Mirror Status	Alarms when a Database Mirror is in an Invalid state	5 Minutes

Monitors for Microsoft SQL Server Analysis Services

Monitor	Description	Frequency
MS-SQL OLAP Error Log	The MS-SQL Analysis Services error log is polled for errors and failures	Instant
MS-SQL OLAP Service State	The MS-SQL Analysis Services Service is stopped	1 Minute
MS-SQL OLAP Connection Failures	Alarms when an application cannot successfully connect to the MS-SQL Analysis Services Service	5 Minutes
MS-SQL OLAP I/O Errors	Alarms when an I/O error is incurred in the OLAP cube	5 Minutes

Monitors for Microsoft SQL Server Reporting Services

Monitor	Description	Frequency
MS-SQL SSRS Error Log	The MS-SQL SSRS error log is polled for errors and failures	Instant

Monitor	Description	Frequency
MS-SQL SSRS Service State	The MS-SQL SSRS Service is stopped	1 Minute
MS-SQL SSRS Errors	Alarms when an HTTP 400 or 500 error is thrown	5 Minutes
MS-SQL SSRS Server Busy Errors	Alarms when an HTTP 503 error is thrown for insufficient server resources	5 Minutes

Definitions

CenturyLink Service Center: The primary organization for resolving infrastructure issues that is staffed 24/7/365 to respond in a timely manner to incidents and requests pertaining to the Service.

Database Administrator (DBA): Whether a direct employee of the Customer or contracted by the customer to CenturyLink, this role comprises the development and design of database strategies, system monitoring to improve database performance and capacity while taking planned expansion requirements into account. DBAs also coordinate and implement security measures to safeguard the databases.

Environment: The setting where software and other products are placed into operation for their intended uses by end users.

Failover: Failover is switching to a redundant or standby computer server, system, hardware component or network upon the failure or abnormal termination of the previously active server, system, hardware component, or network.

Failover Cluster: Failover clustering is a technology that automatically allows one operating system to take over the tasks and responsibilities of another operating system that has failed. More specifically, clustering refers to a group of two or more operating systems, also called nodes that work together and present themselves as a single virtual operating system to the network. In other words, when a client connects to the clustered SQL Server (s), the network recognizes these as only a single SQL Server. When one of the nodes fails, the failed nodes' responsibilities are taken over by another operating system in the cluster; the end-user notices little if any difference before-during-after the failover.

Major Release: Major Releases (X.y.z) are vehicles for delivering major and minor feature development and enhancements to existing features. They incorporate all applicable error corrections made in prior Major Releases, Minor Releases, and Patch Releases. Software Provider typically has one Major Release per year.

Microsoft Database Mirroring: Database mirroring increases database availability. Database mirroring transfers transaction log records directly from one server to

another and enables a quick failover to the standby server. Customer applications can be configured to automatically redirect their connection information, and in the event of a failover, automatically connect to the standby server and database. Only available in Synchronous replication for MS-SQL Standard Edition and not available in MS-SQL Web Edition, Available in Asynchronous as well as Synchronous replication in MS-SQL Enterprise Edition.

Microsoft Database Snapshots: A database snapshot is a read-only, static view of a database (the source database). Multiple snapshots can exist on a source database and always reside on the same server instance as the database. Each database snapshot is consistent with the source database as of the moment the snapshot is created. A snapshot persists until it is explicitly dropped by the database owner. Snapshots can be used for reporting purposes. Also, in the event of a user error on a source database, the source database can be reverted to the state it was in when the snapshot was created. Data loss is confined to updates to the database since the snapshot was created.

Minor Release: Minor Releases (x.Y.z) are vehicles for delivering minor feature developments, enhancements to existing features, and defect corrections. They incorporate all applicable error corrections made in prior Minor Releases, and Patch Releases.

MS-SQL AlwaysOn Availability Groups: AlwaysOn increases database availability. Always-On transfers transaction log records directly from one server to one or more other servers and enables quick failover and failback from local and remote standby servers. Customer applications natively connect to the AlwaysOn availability group containing one or more databases and automatically redirect their connection information in the event of a failover utilizing Microsoft Clustering technology. Available in Synchronous and Asynchronous replication in MS-SQL Enterprise Edition.

MS-SQL Analysis Services: SQL Server Analysis Services (SSAS) helps build comprehensive, enterprise-scale analytic solutions with integration into the .NET Framework. Many new features extend the data mining and analysis capabilities of Analysis Services.

MS-SQL Reporting Services: Reporting Services is a server-based reporting platform that supports report authoring, distribution, management, and end-user access.

MS-SQL Server Integration Services: SQL Server Integration Services (SSIS) provides mission-critical confidence with greater uptime, breakthrough performance, and enhanced security features for OLTP and Data Warehouse workloads.

Operating System: An operating system (OS) is software that manages computer

hardware resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function.

Patch Release: Patch Releases (x.y.Z) are vehicles for delivering security fixes, feature developments, enhancements to existing features, and defect corrections. They incorporate all applicable error corrections made in prior Patch Releases. Patches are often called "Patch Updates" and are Critical or Security related.

Software: Software in binary form, any other machine-readable materials (including, but not limited to, libraries, source files, header files, and data files).

Software Provider: A third party that makes and sells software products CenturyLink uses in the services we deliver.