



## CENTURYLINK INFRASTRUCTURE & APPLICATION MANAGEMENT SERVICES SERVICE GUIDE FOR DATABASE MANAGEMENT SERVICES

This Service Guide ("SG") sets forth a description of the Database Management services ("Services") for CenturyLink Infrastructure & Application Management Services, including technical details and additional requirements or terms, if any. This SG is subject to and incorporated into the governing agreement and SOW between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant SOW. CenturyLink and Customer responsibilities and service description terms are set forth in this SG.

### SERVICE DESCRIPTION

CenturyLink will provide Services for only for the following database technologies:

- Oracle platform
- SQL platform

The functions performed by CenturyLink will be limited to the following physical database administration activities as in-scope Services under this SG:

- Database Administration
- Database Backup & Recovery
- Performance Monitoring and Tuning
- Service Request Execution
- Minor System Changes
- Software update and patches (excludes version upgrades)

### SERVICE OPERATIONS

CenturyLink is responsible for service operations consisting of the following tasks related to the Services:

- (A) Database Administration.** Tasks associated with the Services that are in-scope include
- Creation of a new database
  - Addition/Removal of database users
  - Database copy
  - Database export
  - Creation of new job schedule
  - Update/change batch job schedule
  - Manage Application database and system copies
  - Account issues
  - Forms issues
  - Monitor/publish stuck transactions
  - Manage Database Management System (DBMS) error logging
  - Install required Patches, Updates and Support packs
  - DR support for annual drill and actual DR
  - Implement recommended configuration for higher availability
  - Provide problem resolution DBMS support for production application databases or as required by SLA
  - Ensures data integrity and consistency
  - Review and consider for approval data edits in prod
  - Report problems and communicate with DBMS vendor and DBMS tools vendors for support
  - Database Replication
  - Database Archiving
  - Database Log Shipping
  - ODBC Connectivity
  - Database Statistics
  - Database Snapshot

**(B) Database Backup and Restore.** Tasks associated with the Services that are in-scope include

- Create and implement database backup solution
- Create and implement database recovery solution
- Manage database backup schedule according to Customer's requirements
- Monitor database servers for database backup failures
- Perform physical database restores to recover from Equipment or database Software problems

**(C) Performance Monitoring and Tuning.** Tasks associated with the Services that are in-scope include:

- Monitor physical DBMS for performance and capacity requirements
- Plan and implement physical DBMS performance improvements (i.e., resize logs, modify DBMS configuration, modify physical layout, etc.) to meet objectives
- Recommend Operating System tuning to address DBMS performance issues
- Maintain the database to the highest availability state required by Users and in accordance with the Service Level Agreements

**(D) Service Request Execution.** Tasks associated with the Services that are in-scope include

- Participate in Incident reviews as required
- Execute DBMS changes in support of major application or logical database design changes
- Enroll Users by assigning appropriate roles and profiles at the RDBMS level

**(E) File/Print Management.** Tasks associated with the Services that are in-scope include

- Instance name changes
- Implement physical database changes in support of normal data growth

**RESPONSIBILITY MATRIX**

The responsibilities of CenturyLink and Customer associated with the delivery of Services are set forth below. These Service parameters along with delivery processes and procedures will be documented in Customer's Service Operations Documentation.

<b>Responsibility – Database Management Services</b>	<b>CenturyLink</b>	<b>Customer</b>
<b>Procurement of:</b>		
• Monitoring tools.	✓	
• Hardware and Software		✓
• Maintenance Agreements		✓
<b>Define:</b>		
• Patches, Updates, Service Packs to Development, QA and Production environments.	✓	
• Acceptance testing following patches to production systems and storage.	✓	
<b>Installation and maintenance of:</b>		
• Database software and patches.	✓	
<b>Monitor, analyze and respond to Incidents and non-conformance issues:</b>		
• Database for availability (i.e. up/down status).	✓	
• Database usage and capacity.	✓	
• Database system logs and short dumps.	✓	

<b>Responsibility – Database Management Services</b>	<b>CenturyLink</b>	<b>Customer</b>
<ul style="list-style-type: none"> <li>Job schedule.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Alerts that are received when faults occur or monitoring thresholds are exceeded.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Assigning Incident tickets to pre-determined resolver groups based upon alert information.</li> </ul>	✓	
<b>Execute:</b>		
<ul style="list-style-type: none"> <li>Job schedule.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Backup and recovery.</li> </ul>	✓	
<b>Create, modify and deactivate:</b>		
<ul style="list-style-type: none"> <li>Server and storage OS configurations.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Application Landscape architecture.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Job schedule within the job scheduling tool.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>System configuration including profile parameters and operation modes.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>User additions, changes and deletions.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Transport database.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Security roles and profiles single, parent/child and composite</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Resource pools.</li> </ul>	✓	
<b>Analyze and complete:</b>		
<ul style="list-style-type: none"> <li>Remote Restoration of Service for Incidents within the scope of CenturyLink's Services.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Problem Management.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Service Requests.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Change Requests.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Major/Minor Database Changes, which will require a Change Order.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Database performance tuning.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Performance and usage trends.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Capacity plans.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Restoration of Service for Incidents assigned to Customer or Customer's Third Party.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Application performance issues.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Application Risk analysis regarding new releases.</li> </ul>		✓
<b>Consult with Customer on:</b>		
<ul style="list-style-type: none"> <li>Design of security roles and profiles.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Backup requirements.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Test plans.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Risk analysis regarding new releases.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Application audits.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>License utilization.</li> </ul>	✓	

<b>Responsibility – Database Management Services</b>	<b>CenturyLink</b>	<b>Customer</b>
<b>Approve or validate:</b>		
<ul style="list-style-type: none"> <li>Application landscape architecture.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Patches to Development, QA and Production environments.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Development test results.</li> </ul>		✓
<ul style="list-style-type: none"> <li>QA test results.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Applications are operational following Minor System Changes.</li> </ul>		✓
<b>Operation of:</b>		
<ul style="list-style-type: none"> <li>Patch Management at Database level</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Manage database backup schedule according to Customer's requirements.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Perform physical database restores, to recover from Equipment or database Software problems.</li> </ul>	✓	
<b>Report on:</b>		
<ul style="list-style-type: none"> <li>SLA performance.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Actual Service volumes relative to expected levels.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Capacity utilization.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Performance and usage trends.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Problem Management activities, including root cause analysis, recommendations and project status.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Quarterly audit to check access to all sensitive objects and transactions.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>User license utilization.</li> </ul>	✓	