

Operational Level Agreement: MySQL Database Incidents and Requests

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Document Approvals

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*Approval method of **Email** indicates that approval was received via email message. **Signature** indicates that the approver signed a hard copy of the document and that copy is on file with OIT and the client.

Operational Level Agreement Overview

This Operational Level Agreement (OLA) is for the purpose of identifying the basic services and any specific optional services to be provided by OIT's Database Management Team (PROVIDER) to all OIT Units (CLIENT) regarding setup, monitoring, and maintenance of MySQL databases.

The section of this document titled *Glossary of Terms & Acronyms* is the authoritative definition of terms, acronyms, and abbreviations used in this document.

Description of Services

PROVIDER offers database services and hosting to manage the full life cycle of database server administration including installation, maintenance, updates, security, backups, performance monitoring, capacity planning and upgrades. Databases require high volume access with quick response and also need to be highly available and recoverable in the event of a disaster. The DBA team can assist in ensuring campus databases meet these requirements.

Services Included

- **Database Hosting**
 - Physical or virtual servers for hosting CLIENT's databases in OIT's main Data Center.
 - MySQL Database creation and management according to requirements provided by CLIENT.
 - MySQL server installation and upgrades
 - Installation of appropriate supported MySQL software
 - MySQL Database user login and management
 - Configuration of MySQL Enterprise Monitor tool and integration with Oracle Enterprise Monitoring tool to allow notifications of database up/down, high CPU or disk utilization
 - Performance Analysis using MySQL Enterprise Monitor tool and MySQL Workbench
 - OIT MySQL database server inventory documentation update
 - MySQL Database upgrades and migration
- **Data Recovery Services**
 - Full database backups and restores using MySQLBackup tool
 - Coordination of Networker backups including off-site tape backups and data recovery testing
 - Data Exports and Imports using mysqldump tool
- **Performance & Tuning**
 - Coordination of disk space monitoring and notification of low disk space
 - Optimization of database and backup locations on disk to improve performance and ease of recovery
 - Capacity planning and performance tuning
 - Installation and monitoring of Netreo alerts
 - Installation and monitoring using Oracle Enterprise Manager and MySQL Enterprise Monitoring tool
 - Performance Analysis using MySQL Enterprise Monitoring tool, MySQL Workbench
- **Replication and Warm Standby Data**
 - N/A
- **Security**
 - Secure Tunneling
 - Manage operating system patching impact on MySQL server/databases
 - MySQL database patch management and installation
 - MySQL Database encryption configuration using Transparent Database Encryption option

Services Specifically Excluded

The following are specifically excluded from this Agreement:

1. Services for databases other than MySQL (e.g., Microsoft SQL Server, Microsoft Access, DB2, Oracle, etc.).
2. Damages resulting from storage of data in violation of OIT's and UCI's Privacy and policies. (See *Liability* section, below.)

Service Performance

Hours of Operation

Regular Business Hours

PROVIDER's regular business hours are defined as every non-holiday Monday – Friday between the hours of 8:00am and 5:00pm Pacific Time.

Email: oit@uci.edu
Phone: (949) 824-2222

After Hours

PROVIDER will provide after-hours technical support, outside regular business hours, for major or critical system-wide incidents that impact all or a large number of CLIENTS. The OIT Help Desk is staffed 24 hours a day, 7 days a week and provides a means for handling emergency after-hours incidents. Help Desk agents can notify on-call OIT technical staff and other resources when appropriate.

Email: oit@uci.edu
Phone: (949) 824-2222

Maintenance

Regularly Scheduled Maintenance

Database servers are typically taken offline for regular maintenance such as upgrades, patches, and other noncritical support operations, typically quarterly, or as patches are released by the database or operating system vendor.

Maintenance window will be negotiated with CLIENT to ensure it minimizes the impact on the database services provided.

CLIENTs should make allowances for this pre-negotiated maintenance window when scheduling production processes or activities.

Emergency Maintenance

On rare occasions, it will become necessary to interrupt access to a database to perform emergency (sometimes referred to as "out of band") maintenance. Given the nature of this type of maintenance it is not always possible to provide much notice before the service interruption occurs or to accurately predict the duration of the service outage. PROVIDER will make every effort to provide as much notice as far in advance as possible before performing such maintenance and to restore full service as soon as possible.

Impact on Service During Maintenance Operations

During the regularly or emergency scheduled maintenance window, access to CLIENTs database may be reduced or the database may be completely unavailable. PROVIDER will notify CLIENTs in advance of the maintenance window to inform them on what the impact on the database service is likely to be. Impact on services during emergency maintenance will be communicated to CLIENTs as soon as possible once it is determined the regular or emergency maintenance is required.

Performance Metrics & Service Commitment

Response on Services Offered

The following table defines anticipated response times for services ordered from PROVIDER. The target response times are based on work done during normal business hours. All response times are "not to exceed" estimates. Expedited service deliveries must be arranged and agreed to by both PROVIDER and CLIENT before work begins.

Service	Target Response Time
General Consulting Services on Existing Databases	Negotiated
Database Creation for Existing MySQL Server	3 days
Database Login/Schema Creation	1 days
OIT database server inventory documentation update	2 days
MySQL Database Server Setup and Installation	Negotiated
MySQL Database Upgrades and Migration	Negotiated
Data Recovery	
Setup MySQLBACKUP full database backups	3 days
Database data export	1 days
Database data import	1 days
Database restore - full (if backups available locally)	2 days
Database restore - full (if backups need to be retrieved offsite)	7 days
Database restore - Point in time	3 days
Performance and Tuning	
Capacity planning	10 days
Performance tuning	10 days
SQL Tuning, Index Tuning and analysis	10 days

Configure Enterprise Manager to notify DBA team of database up/down, high CPU, disk space utilization and other MySQL errors	2 days per server
Replication and Warm Standby Data	
N/A	
Security	
Hardening of database server security based on scan results and recommended best practices (security audit)	10 days
Database encryption configuration	20 days
Scanning of database searching for Personal Identity Information using Identity Finder	15 days
Secure Tunneling	15 days

General Performance Metrics

The following service commitments apply to all services delivered and supported by PROVIDER.

Performance Metric	Service Commitment	Measurement
Database Uptime	Databases are expected to be available 100% of the time except during scheduled or emergency maintenance windows.	Outage reports produced biweekly from Help Desk systems. Copies of these outage reports will be made available to CLIENTs on request.
Disk Space	PROVIDER will be notified when disk usage reaches 85% or more of the agreed upon allocation and will obtain more space as necessary to continue successful database operations.	Oracle Enterprise Manager or other tools automatically monitor usage and that generates notifications when a database file system reaches 85%, 90%, and 95% of its allocation. Notification of reaching these thresholds and corrective actions will be made available to CLIENTs on request.

Incident & Problem Management

In order to serve CLIENT optimally, incidents affecting service delivery are prioritized based on their level of impact on business operations and the criticality of the service that is interrupted. PROVIDER staff will work with CLIENT to classify and prioritize incidents based on information provided by CLIENT and the results of preliminary troubleshooting. Generally, CLIENT can expect a response from PROVIDER within the time guidelines listed below, but these are not resolution time guarantees. Often, PROVIDER will be able to respond to incidents more quickly than the times listed, but in times of exceptionally heavy demand, incident response can take longer. Incidents reported during the defined maintenance window that are the result of the maintenance being performed will be acted upon at the end of the scheduled maintenance. Incidents that are not the result of scheduled maintenance will be prioritized and escalated normally.

After Hours Assistance

The response time guidelines below are only applicable during normal business hours. Outside of normal PROVIDER business hours, the response is typically the following business day. For emergencies that cannot wait until next business day, the person reporting the incident should contact the OIT Help Desk and indicate to the agent that the incident is an emergency and immediate assistance is required. The Help Desk Agent will determine the priority of the issue (using the guidelines below) and will contact appropriate on-call staff. On-call staff will take action to respond the problem within the guidelines indicated below and will coordinate with the OIT Help Desk to respond to the person who reported the emergency.

Incident Priority & Response Time Guidelines

Except where noted above in the section titled *Performance Metrics & Service Commitment*, the following definitions of Priority, Impact, Urgency, and Response Times will apply to all services provided under this Agreement.

IMPACT is a measure of the effect of an Incident on business processes. Impact is based on how service levels will be affected and the number of end CLIENT affected. Usually the ticket creator declares the initial impact. The impact of an incident can be adjusted as insight into the issue grows.

Campus-Wide	Multiple Groups	Single Group	Individual
<ul style="list-style-type: none"> Campus-wide service down Multiple locations' service completely down during operating hours Impacts instruction >250 individuals 	<ul style="list-style-type: none"> Campus-wide service working, but degraded performance or function Single location's service completely down during operating hours 10 - 250 individuals 	<ul style="list-style-type: none"> Single location's service degraded Development or test service impact in noncritical period Single/few CLIENT affected 2 - 10 individuals 	<ul style="list-style-type: none"> Outside of service's operating hours Effects only IT Services operations Single individual

URGENCY is a measure of business criticality of an Incident. The urgency reflects the time available to respond to the incident before the impact is felt by the business. In practical terms, the client judges urgency.

Service Unavailable	Service Degraded	Interfering with Work	Tasks More Difficult
<ul style="list-style-type: none"> No viable workaround Caller indicates “emergency” High financial or reputation risk or implications 	<ul style="list-style-type: none"> Complex workaround Medium financial or reputation risk or implications 	<ul style="list-style-type: none"> Intermittent Workaround is disruptive or risky Low financial or reputation risk or implications 	<ul style="list-style-type: none"> Easy workaround Failover in place Not service disrupting (yet)

PRIORITY is a function of Impact and Urgency. Target response times are assigned based on Priority.

		Impact			
		Campus-Wide	Multiple Groups	Single Group	Individual
U r g e n c y	Service Unavailable	Major 4 hours	Critical 6 hours	High 1 day	Moderate 2 days
	Service Degraded	Critical 6 hours	High 1 day	Moderate 2 days	Moderate 2 days
	Interferes With Work	High 1 day	Moderate 2 days	Moderate 2 days	Routine 7 days
	Tasks More Difficult	Moderate 2 days	Moderate 2 days	Routine 7 days	Routine 7 days

Service Costs

Database installation and supporting services are provided to CLIENT at no cost unless exceptional hard costs to PROVIDER are identified. In these cases, the cost of the service and the reimbursement method will be presented to CLIENT before services are provided.

PROVIDER & CLIENT Responsibilities

PROVIDER Duties & Responsibilities

1. Adhere to committed response times listed above for incidents involving interruption or degradation of services.
2. Provide a team of technical experts and technical managers to provide a team-centered organizational response to all support needs.
3. Provide management of appropriate service support operations (Help Desk, walk-in support, and field or on-site support).
4. Provide supervision and technical support for PROVIDER staff assigned to respond to incidents reported by CLIENT.
5. Communicate with all stakeholders regarding all planned and unplanned service-affecting issues and events.
6. Provide professional and competent services.
7. Ensure the safety of the technical staff and the CLIENT being served.
8. Notify CLIENT on Out of Band Patching.

CLIENT Duties & Responsibilities

1. Each team or other organizational unit that uses services provided under this agreement must identify a Client Representative to serve as the primary point of contact (POC) when it becomes necessary to communicate directly with CLIENT.
2. Remain available and responsive for service request submissions and while managing incidents.
3. Add Client Representative to the Watch List for this wiki page to receive notifications of changes to this Agreement.
4. Engage PROVIDER for assistance with backup, monitoring and upgrade needs for services covered by this Agreement.
5. Follow established procedures for requesting services, and reporting and escalating incidents.
6. Specify the appropriate level of urgency and any specific expectations when requesting support services or reporting incidents.
7. Follow PROVIDER and CLIENT acceptable use policies to ensure that services and other resources are used responsibly.
8. Provide PROVIDER with candid and specific feedback regarding delivery of support services.

Problem Management & Disaster Recovery

In the event of a major emergency or disaster that affects PROVIDER's ability to deliver services, recovery procedures will be put into effect in accordance with PROVIDER's Business Continuity Plan. Details of this plan can be made available to CLIENTs by request.

Service Recovery Priority

In the event of a major emergency or disaster, priority for service recovery will be assigned as documented in PROVIDER's Business Continuity Plan.

Change Management Process

For required changes and updates that fall outside the normal maintenance window, the following general procedure will be followed:

1. PROVIDER will notify all CLIENTs affected by the change.
2. Changes will be made.
3. Changes will be tested.
4. Services will be restarted or otherwise restored.
5. PROVIDER will notify CLIENTs that services are available.

Where possible, changes will be made in such a way that they can be backed out and the database returned to its condition prior to the change. This may not be possible in all cases.

Escalation of Issues

PROVIDER staff will provide technical support and will answer technical questions about the status of provided services. In the event that an incident requires escalation, the following steps will be taken depending on the type of issue that is being reported.

Escalation of Nontechnical Issues

The Client Representative is primarily responsible for addressing nontechnical issues. Under normal operation, Client Representative will provide a best-effort response to end user concerns about nontechnical issues. If an end user requests escalation of a nontechnical issue from PROVIDER, then PROVIDER will direct the user back to the Client Representative. For nontechnical issues, the order of escalation is as follows:

Level 0: End user will contact Client Representative and provide information about the issue.

Level 1: Client Representative will work directly with end users regarding any nontechnical issues.

Level 2: Client Representative will collaborate with Service Manager to resolve the issue and communicate the overall status to end users.

Escalation of Technical Issues - Routine & Moderate Priority Issues

PROVIDER is primarily responsible for addressing technical questions and providing solutions to technical problems. Client Representative will collaborate with PROVIDER to manage communications with end users. For routine technical issues reported under normal operating conditions, the order of escalation is as follows:

Level 0: Client Representative or end user will refer technical issues to PROVIDER via the OIT Help Desk or email sent to dba@apollo.adcom.uci.edu.

Level 1: Help Desk will contact PROVIDER staff assigned to the issue for updates on issue status. PROVIDER staff assigned to the issue will communicate the status to Client Representative.

Level 2: Help Desk will contact Service Manager for updates on the issue and Service Manager will communicate the status to Client Representative and Help Desk.

Level 3: Help Desk will contact Service Executive for updates on the issue and Service Executive will communicate the status to Client Representative and Help Desk.

Escalation of Technical Issues - High, Critical & Major Issues

Client Representative will collaborate with PROVIDER to manage communications with end users. For technical issues that require immediate or faster than routine response, the order of escalation is as follows:

Level 0: Client Representative or end user will refer technical issues to PROVIDER via the OIT Help Desk or email sent to dba@apollo.adcom.uci.edu and will indicate that the issue is of higher than normal urgency.

Level 1: Help Desk will contact Service Manager for updates on the issue and Service Manager will communicate the status to Client Representative and Help Desk.

Level 2: Help Desk will contact Service Executive for updates on the issue and Service Executive will communicate the status to Client Representative and Help Desk.

Term, Review & Termination of Agreement

Effective Date:

End Date:

Previous Review: N/A

Next Review:

Review

This Agreement is a dynamic document and will be periodically reviewed and changed when any of the following occurs:

- The environment changes.
- CLIENT's expectations or needs change.
- Workloads change.
- Better metrics, measurement tools, or processes become available.

At a minimum, this Agreement will be reviewed bi-annually on the anniversary of its Effective Date. Contents of this Agreement may be amended as required and PROVIDER will communicate changes to all affected parties. PROVIDER will incorporate all subsequent revisions and obtain agreements and approvals as required.

Termination of Agreement

This agreement governs the support of basic services and any agreed upon optional services to be provided by PROVIDER as described in the previous sections. It may not be terminated except by decision of the Service Executive and approval by the Office of the CIO. All CLIENTs will be notified at least 60 days prior to the termination of this agreement or the services covered here.

Liability

PROVIDER expects every individual to be aware of and accountable for complying with the University's and OIT's Privacy requirements and to actively support the University's commitment to respect the privacy of individuals. PROVIDER assumes no liability for damages incurred by CLIENTs in violation of the University's privacy requirements. For more information on data Privacy and OIT's related policies, see:

<http://www.security.uci.edu/privacy.php>

Glossary of Terms & Acronyms

Term	Definition
Client	A person or group that agrees to use a service provided by PROVIDER.
DBA	Database Administrator. An IT professional responsible for the installation, configuration, upgrading, administration, monitoring, maintenance, and security of databases.
Emergency	An event determined by OIT, PROVIDER or client staff to be of major or urgent priority based on consideration of the incident's impact and urgency.
End User	An individual (typically a person) at the end of a service who is using the service for the purpose for which it was intended. The term "end user" distinguishes the consumer of a service from intermediary CLIENT (developers, installers, administrators, system operators, etc.) who make the service available for the end user.
Maintenance Window	A defined period of time during which planned outages and changes to production services and systems may occur. The purpose of defining standard maintenance windows is to allow CLIENT of the service to anticipate and prepare for possible disruption or changes.
Nontechnical Issue	For the purposes of this Agreement, a nontechnical issue is any issue that does not meet the definition of a technical issue. This includes but is not limited to the following: <ul style="list-style-type: none"> • Quality of service complaints. • Customer service quality complaints. • Requests for reimbursement. • General, nonspecific dissatisfaction with a service.
OIT	Office of Information Technology. OIT provides telephone, network, and computing services in support of research, administration, and education at UCI. OIT provides central computing services, computer laboratories, departmental and research-group support services, business application support, and campus-wide technical coordination. OIT supports the campus network infrastructure and provides connectivity on campus and to the Internet via wireless and mobile wired networks, e-mail accounts, interactive Unix accounts, and a network file-sharing service for students, faculty, and staff.
POC	Point of Contact. A point of contact is the person or department serving as the coordinator of information concerning an activity. A POC is used in many cases where information is time-sensitive and accuracy is important.
Resolution Time	The time it takes to resolve a USER's issue or answer their question. It is measured from the time an incident is recorded, either by CLIENT via an email or Web submission, or by an OIT Help Desk Agent or other support group manually creating a record, until the time the CLIENT are advised that the incident has been resolved. Resolution Time is the time from incident creation until the incident's status is set to "Resolved." Resolution Time is generally only recorded during normal business hours.
Response Time	The time it takes to acknowledge an incident in a non-automated way. It is measured from the time an incident is recorded, either by CLIENT via an email or Web submission, or by an OIT Help Desk agent or other support group manually creating a record, until the time that CLIENT are advised that the incident has been received and is being addressed. CLIENT should be contacted either by phone or email and the incident marked "In Progress" to stop the response time clock. Response Time is generally only recorded during normal business hours.

Service	A combination of people, processes, and technology that provides one or more end CLIENT or CLIENT the ability to perform a specific function or business process. A service is typically used by a client in support of the CLIENT's business operations but is sometimes delivered directly to an end user. Individual services provided to CLIENT by PROVIDER under this specific Agreement are described in the section of this Agreement titled <i>Description of Services</i> .
Service Executive	The person in the group that provides the service who represents the service from an administrative standpoint. The Service Executive is typically an executive (director level or above) who works with providers and CLIENT to prepare the Agreement, agree on recharge rates and performance metrics, etc.
Service Manager	The primary technical contact in the group that provides the service. The Service Manager is generally the expert on all technical aspects of the service being provided under the Agreement. The Service Manager will generally be consulted during the preparation of an OLA to make sure the commitments being made are reasonable and supportable from a technical standpoint.
Technical Issue	For the purposes of this Agreement, a technical issue is any issue that directly impacts any of the provided services and is outside CLIENT's ability to manage without assistance from PROVIDER.
User Representative	The person in an organization who acts as the primary point of contact during resolution of major issues. The User Representative can provide a delegate to represent him or her but the User Representative retains the responsibility for compliance with the terms of the Agreement. For the purposes of this Agreement, each team, functional unit, or other organizational unit that uses services provided under this agreement must identify a User Representative.

Revision History

Date	Ver	Description of Change	Contact
09/28/2016		Initial document creation	D. McMurray
		Effective date	D. McMurray
		Document finalized and approved	M. Arseniev