Record Locking Cheatsheet

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Overview

Similar to any application built on a relational database, the Salesforce platform uses locks to ensure referential integrity of its data. Most transactional database operations only hold these locks for a very short period of time and the volume is not significant enough to cause contention. However when dealing with large data volume objects or processing large jobs, record locks and contention can become an issue. This cheat sheet details the behavior of objects that cause the most common locking issues.

Using this Cheatsheet

This cheat sheet is additive in nature, so you must consider all rows when determining the locking behavior of a particular object and operation. For example, if you are performing an insert of an opportunity record and you have a roll-up summary field on the account object, and a lookup to a custom object, you would need to look at the following three rows in the cheat sheet:

1. Opportunity inserts lock the related account record
2. The roll-up summary field also locks the related account record
3. The lookup may lock the lookup record depending on its configuration

Object-Specific Locking Behavior

Login and Authentication features and restrictions. These settings should be enabled as appropriate for your company.

Focus	Operation	Locks	Detail	Risk of Lock Contention
Any record	Update	Updated record, sharing records	Updating locks target record and may result in the creation and/or deletion of one or more sharing records in a private sharing model.	Low
	Delete	Record being deleted, sharing records	Deleting locks the record being deleted and one or more sharing records in a private sharing model.	Low
Account	Update / Delete	Group Table	Lock occurs if updating the owner field of, or deleting, an Account that has associated community or portal roles.	High
AccountTeamMember, CaseTeamMember,	Insert / Delete	Associated Account, Case, or Opportunity	AccountTeamMember inserts, updates and deletes can result in the creation and deletion of child implicit shares on Cases, Contacts and Opportunities but associated object records are not locked. CaseTeamMember and OpportunityTeamMember inserts & deletes can result in the creation or deletion of a parent implicit account share, however existing parent implicit shares are not locked.	High
CampaignMember	Insert / Update	Associated Campaign, Contact or Lead		High
Case	Insert / Update / Delete	Account, Contact		High
Contact	Insert / Update	Parent Account		High
Event	Insert / Update / Delete	Who, Account		High
		What	Locks on What occur if the What has a LastActivityDate field or it is related to an Account.	High
GroupMember	Insert / Delete	Group Table	Inserting or deleting group members and territory members causes lock.	High

Record Locking Cheatsheet

Object-Specific Locking Behavior (Continued)

Focus	Operation	Locks	Detail	Risk of Lock Contention
Opportunity	Insert / Update / Delete	Parent Account		High
Task	Insert	Who, What, and Account	Locks only occur if the Status is Completed and the ActivityDate is not null.	High
	Update / Delete	Who, What, and Account		High
Territory	Insert / Delete / Reparent / Add or remove User from Territory	Group Table		High
User	Insert / Update	Group Table	Requires non-null UserRoleId on insert. Requires UserRoleId change on update.	High
UserRole	Insert / Delete	Group Table		High
	Update	Group Table	Reparent (includes changing portal account owner and updating the UserRole of a user that owns a portal account)	High

Custom Configuration Locking Behavior

Focus	Operation	Locks	Detail	Risk of Lock Contention
Any record	SELECT FOR UPDATE SOQL query	Selected records	Locks all records retrieved in SELECT statement that uses FOR UPDATE.	High
Detail record of Master-Detail relationship	Insert / Delete	Master record		High
	Update master record ID	Master record		High
Record with a lookup relationship	Insert new record with lookup value	Lookup record	Locks only occur if lookup relationship is not configured to clear the value of this field if the lookup record is deleted.	High
	Update record and change lookup value	Lookup record	Locks only occur if lookup relationship is not configured to clear the value of this field if the lookup record is deleted.	High
Record with a roll-up summary field	Insert / Update / Delete detail record	Master record(s)	Master record(s) locked regardless of whether the roll-up summary's target field has a value or the value has changed during an update. This behavior is the same on a roll-up summary on a standard object, such as Account.	High
Workflow	Workflow field update	Record being updated by workflow	Only workflow rules that trigger a field update will lock.	High

Sharing Operation Locking Behavior

Focus	Operation	Locks	Detail	Risk of Lock Contention
Sharing rule	Modify sharing rule	Object share records	Results in addition/removal of object share records based on previous definition of rule. Object records are not locked.	Low
Org-wide defaults	Modify org-wide defaults	Object share records	Results in addition/removal of object share records. Object records are not locked.	Low
Account assignment rules	Run assignment rules	AccountShare, CaseShare, ContactShare, OpportunityShare	Results in addition/removal of object share records. Object records are not locked.	Low
AccountShare	Insert / Update / Delete	CaseShare, ContactShare, OpportunityShare	Can result in creation / deletion of child implicit shares. Object records are not locked.	Low
CaseShare	Insert / Update / Delete	AccountShare	Can result in creation / deletion of parent implicit share. Existing shares are not locked.	Low
ContactShare	Insert / Update / Delete	AccountShare	Can result in creation / deletion of parent implicit share. Existing shares are not locked.	Low
OpportunityShare	Insert / Update / Delete	AccountShare	Can result in creation / deletion of parent implicit share. Existing shares are not locked.	Low
Role-based portal user	Provision	Group Table		High

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Related Resources

On Architect Core Resources: developer.salesforce.com/architect

"Designing Record Access for Enterprise Scale"

"Record-Level Access: Under the Hood"

"The Salesforce Bulk API - Maximizing Parallelism and Throughput Performance When Integrating or Loading Large Data Volumes"

On the Salesforce Developers Blog: developer.salesforce.com/blogs

"Locking Down Record Access in Salesforce"

"Managing Lookup Skew in Salesforce to Avoid Record Lock Exceptions"

"Reducing Lock Contention by Avoiding Account Data Skew"

"Group membership operation already in progress – Managing Group Membership Locks for Success"

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