VOUR ULTIMATE GUIDE TO SALESFORCE storage limits

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Slow load times. LIMIT_EXCEEDED errors. Issues saving reports. Sluggish performance. These could all be signs that you're reaching your storage limits.

In this resource, we will explore the limits you may encounter, understand how storage is utilized, and discuss strategies to manage and optimize your Salesforce organization effectively.

Storage

First, let's understand storage and how it works within Salesforce. Storage is essential for maintaining data in Salesforce, but like anything - it has limitations. Salesforce uses shared resources to manage the multi-tenant architecture. Multiple organizations (tenants) share the same infrastructure while keeping their data and configurations separate. The advantages of this model are automatic upgrades, scalability, and high availability which allows organizations to focus on their business processes and applications.

Governor Limits

Salesforce enforces Governor Limits - a set of predefined resource usage limits to prevent any single user or organization from monopolizing the shared resources. These limits are in place to ensure the fair usage of resources and maintain system stability, reliability and security. Governor Limits are applied across various aspects of the Salesforce platform, from CPU time and memory, to data storage and API calls, and much more. Salesforce allocates storage based on the organization's edition to ensure fair performance. Salesforce aims to optimize the allocation and utilization of storage resources, resulting in minimized expenses while maintaining adequate performance for their users.



Salesforce Strategies for Resource Utilization

When it comes to storage resource utilization, Salesforce employs several strategies:

- Data Compression techniques reduce the size of stored data.
- **Data Duplication** is used to eliminate redundant copies, storing only a single instance of each unique piece of information.
- **Tiered Storage** frequently accessed, and critical data is stored in highperformance storage, while less frequently accessed data is moved to lower-cost storage options, optimizing both performance and costs.
- Intelligent Data Placement uses intelligent algorithms to help ensure that frequently accessed data is readily available and that less accessed data is stored in more cost-effective storage solutions.
- Monitoring Storage Usage and Performance Metrics to identify potential bottlenecks. This allows Salesforce to optimize storage configurations, and make adjustments to achieve a balance between performance and cost-effectiveness.

How Salesforce Calculates Storage Allocation

<u>File and Data Storage allocation</u> is determined based on a company's Salesforce edition and the number of user licenses. Each edition has a specific baseline allocation, with additional storage allocated per user, subject to certain limits.

For File Storage allocation, Contact Manager, Group, Professional, Enterprise, Performance, and Unlimited Editions are allocated 10 GB of file storage per org. Depending on the edition there is an additional allocation of storage per user; however, if there are less than 10 users then it is a **total** of 1GB and not per user.

For Data Storage allocation, Contact Manager, Group, Essentials, Professional, Enterprise, Performance, and Unlimited Editions are allocated 10 GB for data storage. Again, depending on your edition, the allocation of storage per user can vary from 20MB to 120MB per user.

For <u>API Request Allocations</u>, these are also calculated depending on your edition and licenses. The basic formula is as follows:



It may appear to be a substantial amount of storage, particularly for organizations with a significant number of users. However, poor management can quickly lead to storage depletion and degraded performance.

The Core Salesforce Limits

There are two main types of limits that Salesforce users are likely to encounter in an org: **File & Data Storage** and **API Limits**.

File & Data Storage

File storage encompasses various components like attachments, Salesforce CRM Content, user photos, documents, and more.

Data storage is used by standard and custom objects in Salesforce. Objects like Contacts, Leads, EmailMessage, Task, and Events tend to contribute more to storage usage.

API Call Limits

API requests play a crucial role in integrating and interacting with Salesforce, and include Concurrent API Request Limits, API Timeout Limits, and Total API Request Allocations. These limits affect the number and duration of API calls your organization can make within a given period.

Concurrent API Request Limits

Limits are based on many factors, one being the amount of calls in a given period. Rate Limit is the number of calls that can be made in a certain amount of time, which is then used to manage the API Calls and API operations that are taking place. In production, the limit is 25 inbound calls that are 20 seconds or longer.

API Timeout Limits

This limit applies to when an Apex code to an HTTP request or any web services call that can be external or a SOAP API call. Each Apex transaction can make a maximum of 100 calls to or from an HTTP request or API call, with a maximum execution time of 10 minutes. Outbound calls (Callouts) are limited to the number of transactions and maximum timeout. Each action that makes an API inbound call, will count towards usage limits.



Total API Request Allocations

Limits are enforced by the total inbound API Request Calls made for a 24-Hour period within the whole Organization. A Full Sandbox has a limit of 5,000,000.

The API Calls that will count against the allocation are:

- Lightning Platform REST API
- Lightning Platform SOAP API
- Bulk API
- Bulk API 2.0.

Any API calls count against the limits Salesforce charges for, with the exception of Outbound Messages and Apex callouts. If CRM Analytics is in use, the Reports and Dashboard API has limits as well. The <u>Reports and Dashboard API</u> counts towards the organization's 24 Hour API usage.

See Salesforce Developer Limits Quick Reference

*Note - the numbers cited in this document are accurate as of the date of publication, but these numbers may change based on Salesforce documentation

Impact of Exceeding Storage and API Limits

When an org is nearing or at 100% of storage allocation, Salesforce will perform as expected. However, once 100% allocation has been surpassed, issues will begin to arise. Exactly when this will happen will be dependent on the implementation and configuration of the org. But slowly, users will notice a degradation of the overall performance of the org. It will take much longer for reports to run, pages will be slow to load, and may even time out, and users may be unable to save reports. When an Admin receives an email notification from Salesforce, this is the ultimate indication that storage is in crisis. At this point, it's either time to clean up the org or purchase additional storage.

When API Limits have been hit, API usage is blocked for 24 Hours. All integration usage is stalled until the daily API usage is back under the limit. This has the potential to create significant challenges within an organization, as hitting the API call limit essentially means that critical integrations will simply stop working and an error message will be returned.

When Concurrent API requests limits are exceeded, the API returns a REQUEST_LIMIT_EXCEEDED exception code and no other concurrent requests will be processed until the requests drop below 25.

It is crucial to address these issues promptly by optimizing storage usage or purchasing additional storage or API resources from Salesforce.

How to Monitor Salesforce Storage & Usage

It is important to have a process in place to monitor storage and usage. This can be accomplished easily within the Salesforce platform, if Admins know where to look.

Checking File & Data Storage

To track File and Data Storage usage, navigate to the Company Information tab in Setup for a quick overview of the amount used. Detailed storage information is available under the Storage Usage section by selecting Setup and then typing storage in the quick find box. Under the Data tab, select "Storage Usage".

The Storage Usage is listed in tables. The first table is where the limit of storage and the amount of storage used per storage type can be found. Under the table for "Current Data Storage Usage" or "Current File Storage Usage", more detailed storage information is categorized by type, the record count, the storage amount and the percent. This is a good place to start narrowing down the search into which object is the source of the storage limit issue(s).

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File Storage	20.0 MB	190 KB		1%
Big Object Storage	1,000,000	٥		0%
Current Data Storage Usage				
Record Type		Record Count	Storage	Percent
Loads		68	136 KB	20%
Contacts		44	88 KB	13%
Opportunities		37	74 KB	11%
Naviliama		36	72 KB	11%
Cases		31	62 KB	9%
Accounts		18	36.KB	5%

The storage percentage is worth monitoring every month; a value at 50% or less is fine. However, if an org is seeing an increase by 10% or more in a month, this may be an indication to take a closer look at what could be driving up storage usage. Keep an eye out for things like third-party integrations that create records. If these were integrated into an org, they may cause a significant jump in storage usage. Across CloudKettle clients, the most common culprit is Marketing Automation and Sales Engagement (like Salesloft and Outreach) solutions that are often configured to create a new Activity record in Salesforce each time an email is clicked or opened. Across hundreds and thousands of emails, this can generate a massive amount of data in just months.

Configuring these solutions properly is one of the easiest steps to take in preventing data storage issues. Consider generating reports to identify the types of files or data occupying the highest percentages. Adding Created Date and Last Modified Date to the report can aid in identifying records that can be deleted to free up space. The report can be used in a pivot table, and a graph may help to visualize where the storage is being allocated and allow identification of potential problem areas.

When looking at the Task/Events object, Salesforce will archive activities to maintain a clean and organized database by segregating active and completed records.

The criteria for when a Task or Event will be archived is:

- · Closed Tasks with a due date 365 days ago
- Closed Tasks without a due date but created 365 days ago
- · Events that ended more than 365 days ago

Recurring Tasks or Events will not be archived. Archived activities are not deleted, but should be evaluated at regular intervals for deletion. Archived activities can be viewed through the Activity Timeline (1) within the customer record by selecting 'View All' (2) in the Activity History related list. Archived activities are not included in reports but **do** count towards storage space.



For more information on this, see Work with Archived Activities

<u>DataLoader</u> can also be helpful in retrieving and deleting archived records. Be sure to use "Export All" and not just "Export". "Export All" options will include both active and archived records. It will retrieve information that may no longer be visible in regular searches or reports, whereas "Export" will retrieve the currently active records that match the criteria.

When conducting a review of storage, it's worth reviewing all objects, but the following objects are particularly high-risk for consuming significant storage space, and a good place to start:

- EmailMessage will have high usage since every communication will be saved as a record in this object
- Attachment objects from EmailMessages are also stored, and can take up considerable File storage space depending on their size
- If the Org uses Campaigns, Campaign Members can take over the data storage by the creation of too many records if not careful with the settings in an integration

 Activities, in particular Tasks can easily consume storage space, especially if the Salesforce org is integrated with a Sales Engagement such as OutReach or a Marketing Automation tool such as Marketo.

Another way to effectively manage storage is by using a third party tool like CloudKettle's <u>SafeGuard</u>. SafeGuard simplifies the process by sending timely notifications regarding File Storage, Data Storage, and API usage. SafeGuard has the ability to send out notifications on User Management, Security Management, and Data Management. Users can set their preferred notifications with SafeGuard. Analyzing the root cause of excessive storage consumption helps formulate effective strategies for reducing or eliminating the issue.

API Usage

Daily API limits can be monitored by accessing the System Overview and Company Information sections in Setup.

Detailed reports on API calls made in the last 7 days can provide insights into usage patterns. This report can be generated by switching to Salesforce Classic, selecting the reports tab, then within the Administrative folder, select the report "API Usage Last 7 days". This report is broken down to the Name, Username, Email, Client Id (App), the Day of the Week, and the Call Count. It is important to note this report does not distinguish between APIs that count against an org's threshold vs. those that do not.

Event Monitoring in Salesforce enables Admins to observe the intricate details of user activity, known as Events. A total of 50 Event Types can be monitored through Event Monitoring, with API calls being one of them. These Events are stored within event log files, which are generated upon each event occurrence. The event log files become available for viewing and downloading 24 hours after the event. The specific event types that are accessible for download, as well as the duration of access, depend on the Salesforce Edition.

Organizations using the Enterprise, Unlimited, and Performance Editions enjoy complimentary access to total API usage event log files, featuring a 1-day data retention period. The API can be likened to a bridge connecting Salesforce and the database. While every element in the user interface has its counterpart in the API, there are API objects that remain inaccessible from the user interface.

Further insights into API usage trends and associated details can be identified by querying the Event Log File object:

SELECT

ApiVersion,CreatedById,CreatedDate,EventType,Id,IsDeleted,LastModifiedById,LastModifiedDate,LogDate,LogFile,LogFileContentType,LogFileFieldNames,LogFileFieldTypes,LogFileLength,SystemModstamp FROM EventLogFile

Logs Tests Checkpoints Query Editor View State Progress Problems					
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	SELECT ApiVersion,CreatedById,CreatedDate,EventTy				
Any query errors will appear here					
Execute Use Tooling API					

The EventLogFile object stores log data related to various events, including API requests. By executing this query, a comprehensive set of data related to API request usage can be retrieved on a per-app basis. This includes details about the version of the API used, event types, log file URLs containing detailed request information, timestamps, and various metadata fields associated with the log files. This data can be invaluable for monitoring and analyzing API usage trends, diagnosing issues, optimizing performance, and ensuring the efficient functioning of the Salesforce instance.

The log file field's content is a long string. To make sense of it, a Base64 Decoder can be used. The decoded outcome becomes a regular CSV format that can be copied to a spreadsheet. One of the key columns in the CSV indicates whether the API consumes an org's allocated number requests or not. The detailed consumption information will help clarify which apps are consuming high amounts of API requests.



How to Manage Data Storage and Record Volume Issues in Salesforce

With a better understanding of what can happen when exceeding storage or API Requests and where to view information on storage, companies can be better equipped to prevent an org from hitting its limits.

One of the most effective ways to stay informed is to raise awareness of the common reasons that data storage can get out of control, and creating a report or query to identify the top areas that are causing the excess can be a very helpful place to start.

Every org will look different when it comes to data usage, but there are some best practices that can help stop data storage and API limits from spiraling out of control.

Best Practices for Staying within Storage Limits

Keep an eye on Documents

It's crucial to monitor the number and size of files in the Documents tab and minimize large file uploads such as images and videos. These can consume significant storage space, and may often be documents that are rarely (or never) required. If there are very large files that are indeed required, this may be a good opportunity to explore external solutions such as Salesforce Files Connect.

Keep Track of Integrations Creating Records

Major culprits that deserve a review are the data integrations on the org. This could include Marketing Automation platforms, ticketing systems, etc. In the case of a Marketing Automation platform (like Salesforce Marketing Cloud or Account Engagement) it is important to review the settings, and ensure that records created are limited - if any at all. Where possible for reporting, create the reports in those respective Apps and not in Salesforce. This will help to minimize the data storage in Salesforce.

Attachments

If an org has a large volume of attachments, they can quickly consume the allocated file storage space. As attachments accumulate, orgs may reach file storage limit more quickly, potentially leading to the following effects:

- Data and File Storage Exhaustion
- Reduced Functionality
- Increased Need to Purchase Additional Storage

Attachments are stored within Salesforce and are associated with specific records. When there are high number of attachments, it can impact the performance of your Salesforce instance in the following ways:

- Slower Record Loading Times: As attachments are loaded along with records, a large number of attachments per record can slow down the loading times for those records. Users might experience delays when accessing and interacting with records.
- **System Latency:** The overall responsiveness of your Salesforce instance might decrease due to the additional processing required to fetch and display attachments. This can affect user experience and productivity.
- Increased API and Network Usage: Retrieving attachments requires API calls and network bandwidth. A high volume of attachment-related API calls can consume resources and impact other integrations or applications interacting with your Salesforce instance.

To mitigate these effects, orgs can implement policies for managing attachments and file storage in Salesforce. This includes regularly archiving or purging outdated attachments, optimizing attachment sizes, and considering alternatives like using external file storage solutions or leveraging Salesforce's Files feature for more efficient file management.

Delete/Purge Records

It seems like an obvious one, but it's often overlooked: deleting records can clear up storage space. If records are only required for a specific period, an automated job can be scheduled to delete them or transfer them to an external source in a batch process. By setting up an automated process, companies are able to free up Admin time AND valuable space in the organization.

When looking at what to delete, first consider if it's a record that can/should be deleted, and if not, then ask if it can be archived or managed?

If the records can be deleted, that's great news for storage limits. There are a few options to consider:

- utilizing the Mass Delete Records function
- · leveraging Dataloader,
- · employing a Third Party App to swiftly remove the unwanted records

Along with deleting records, it's a great idea to establish a maintenance plan for cleaning up redundant or outdated records to optimize data storage efficiently.

Institute Data Controls and Governance

Insufficient data controls and governance can also contribute to storage limits being used up. If data is not properly managed and monitored, it can quickly spiral out of control and take up more space than necessary. Similarly, when data is duplicated across Salesforce objects or records, it takes up more storage space than necessary. This can happen unintentionally if data is entered manually or as a result of poor data management practices. Things to consider when initiating data controls include: defining data ownership and responsibilities, establishing data retention policies, and scheduling regular audits of data usage.

Best Practices for Staying Within API Limits

Monitor Integrations & Sync Loops

Integrations with Salesforce make API Calls that should be monitored, as these will count towards API limits. For example, in a Marketo integration, the default setting can make up to 25 API calls every 5 minutes to verify the Salesforce data. That can be 7,200 API Calls in a 24-hour period just to verify the data in Salesforce. If there is an actual data transfer/sync happening, this will add to the amount of API Calls.

It is also important to keep an eye out for integration sync loops. As an example, assume a well-meaning team member creates a custom field called "Last sync time" in Salesforce. This updates each time that the Marketing Automation platform syncs with Salesforce. Assuming the Marketing Automation platform doesn't do this already, this is not a bad idea and unlikely to cause any major problem. But then someone else creates and syncs that field in the Marketing automation platform, which is set to resync each time any time a key field is updated (and this field is in that list). Now we

have a scenario where the field is updated every time a sync occurs, accidentally triggering a syncing loop. This is an extreme example, but much less obvious ones can easily occur in the absence of careful attention to detail.

Customize Settings

The settings within the integrated app should be customized to avoid hitting limits. Some settings that should be reviewed for customization:

- Consider which fields are being synced, and if it's possible to reduce the amount of fields being synced
- Ensure bulk updates are happening wherever possible, which will allow for a greater number of records to be processed at once for something like a Mass Enrichment or a change of ownership on records due to fiscal year change
- · Consider scheduling bulk updates once a week instead of immediately
- In a situation where a temporary increase on the API Call Limits is required, this can be done for up to 2 weeks by contacting Salesforce with your Org Id, the number of the increase, and the reason for the increase. This would be something to consider when embarking on a big change or update in your org.

Conclusion

We've now reviewed:

- Definitions Salesforce Data & File Storage and Data Limits
- Core Salesforce Storage areas
- The impacting of exceeding Storage & API Limits
- · Best practices for staying inside Storage and API limits

If organizations are in a situation where every attempt has been made to get data usage under control, yet usage continues to grow and surpass the allocated limits, it is now imperative to explore the solution of acquiring additional storage or API call limits.

While purchasing additional storage shouldn't be viewed as a cure-all, by doing so the organization will regain its peak performance, and improve the satisfaction of all users. To sustain this optimal state, adhere to best practices including monitoring integrations, purging unused records, customizing settings, and implementing data controls and governance solutions to keep things running smoothly.

