Managing the List View Threshold: Considerations When Using Crow Canyon Software's SharePoint Applications

Crow Canyon Software

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Overview

By default, Microsoft SharePoint allows up to 5,000 items in a list view. A list can have millions of items; the 5,000 item limitation is only for number of items that are returned in a particular view. If a view returns more than 5000 items, then, for performance reasons, SharePoint doesn't show the items and instead returns an error.

This document will outline some of the many ways to overcome this limitation. For SharePoint On-premises (that is, SharePoint 2010, 2013, and 2016), the list view threshold can be increased; please refer to this section. All other options listed below are applicable to both SharePoint Online (Office 365) and SharePoint On-premises

Related Lists (other than Tickets)

In Crow Canyon applications, a list, such as the Tickets list, can have associated items. A Ticket may have Emails, Tasks, Time Tracking, Change Requests, and other items from other lists associated with it. Because of this, even if there are fewer than 5,000 items in the Tickets list, the list view threshold error may still appear.

This is because one or more of the associated lists is causing the error, not the Tickets list itself. These other lists include such ones as "Email Tickets", "Associated Tasks", "Time Tracking", "Change Requests", and any others that are linked to the Tickets list.

To address this situation, index the "Related Ticket ID" lookup column in the related list (such as the Email Tickets, Associated Tasks, Time Tracking, Change Requests, etc.). In this way, the tickets can show the linked items without a "render failed!" error.

Further on this -- if the related list is accessed directly, the list view threshold error could come up if total number of items is more than 5,000. The "All items" view is a special case and can show more than 5,000 items but any filtering, sorting, etc. does not work if the threshold is already crossed and indexed columns are not there. The solution is to create indexes on columns like "Created", "Modified", "Created By" etc. and then create filtered views based on these columns. The date range or column values in views should be selected such that total items returned is less than the threshold (which by default is 5,000).

At some point, Tickets list could also reach the list view threshold (5000 items) and then above approach of managing views will be applicable for the Tickets list as well.

Other approaches to solving the list view threshold issue

There are two other ways to address the list view threshold issue:

1. Indexing the columns
2. Archive old items using Crow Canyon Workflow Manager

Indexing

Please refer to this link on how to create indexes:

Note that there is a limit to number of columns that can be indexed (up to 20 indexes per list or library).

Archival

List items can be archived using Crow Canyon's NITRO Workflow Manager tool to move the tickets along with all related list items like Emails, Tasks etc. to a separate set of lists. Please refer the Archival feature FAQ for more details: http://crowcanyon.info/absolutefm/afmmain.aspx?faqid=193

Even with Archival configured, it is better to add the indexes and create required filtered views as it improves performance. The indexing should be done on the 'live' Tickets list as well as the archived Tickets list (and all the related lists).

Other areas of consideration

These other topics can impact the list view threshold issue in SharePoint Online:

- Lookups
- Associated Items
- List Views and Workspaces
- Reports (Charts or Tables)
- Tiles and Dials

Lookups

If there are more than 5,000 items in a lookup list and there is a lookup column referring to that large list in the Tickets, the lookup column will fail to render in the Ticket.

There are two ways to address this issue in Crow Canyon's applications. One is to configure the Archival feature such that the lookup list is within the threshold limit. Second is to use Crow Canyon NITRO forms for the Tickets. NITRO forms can show a filtered list of items in the lookup control and thus avoid the threshold issue. Also, NITRO forms has feature to search the items instead of loading all of them in the drop-down. Please refer to below link:

https://www.crowcanyon.info/nitro/appmanual_v2/creating-nitro-forms.html (refer "Lookup Settings tab" section)

A common scenario in Crow Canyon's application is the Tickets list lookup column in related lists like "Email Tickets", "Time Tracking" etc. Configure Archival feature using Crow Canyon NITRO Workflow Manager so that old Tickets will be moved to a different list such that live Tickets list will be maintained within the threshold limits. See the Archival feature FAQ for more details.

Another scenario is the Assets lookup column in the Tickets list. If there are more than 5,000 Assets, then this lookup won't be able to show the items. Also, the Ticket form takes more time to load as the number of Assets increases due to the need to fetch all those Assets to show in the dropdown. For this case, configure the NITRO forms:

- Configure filtered view in Assets list and use filter settings in the Asset lookup configuration of NITRO Forms settings (for example, Active Assets could be a view based on certain indexed columns and this view returns less than 5000 items)
- Use dynamic filter, for example, selected user field value in current list item is equal to user field on the Asset list. That way, Assets of only the Requester will be loaded and this will be much faster (this will work if there is an index on Requester column in the Assets list)
- Enable search option so that all Assets are not loaded for lookup; instead, user can search for the required Asset to set it in the lookup field
- Similar configurations are also applicable for Tickets list lookup in the related lists

Associated Items

Create indexes and configure archival as explained above

List Views and Workspaces

List Views

Index the columns that are most common in list views and create filtered views based on these indexed columns. Basic fields that require indexing in the Tickets list are listed below:

- Request Status
- Requester
- Assigned Staff *
- Created
- Modified
- Created By
- Due Date

* Assigned staff: This column is multiple selection enabled user field as per the standard product installation. SharePoint does not support creating an index on this and supports index if this is single selection only. Based on business requirements, the field can stay as a multi-selection and in that case an index cannot be created and therefore filtered views cannot be created based on this column.

Alternatively, you can change this field to single selection and create another field to keep additional staff information. Standard notification features of Crow Canyon application won't be able to send emails to additional staff specified in the new field. But you can use the Crow Canyon Workflow Manager tool to setup notifications for this field.

Please refer to this article http://crowcanyon.info/absolutefm/afmmain.aspx?faqid=241 for workflow configurations.

List Name	Field Name
Tickets	
	Requester
	Request Status
	Assigned Staff
	Category
	Priority
	Due Date
	Related Problem
	Case Id
	Created
	Modified
Email Tickets	
	Related Ticket ID
	Parent Item
	Created
Change Request	Related Ticket ID
Time Tracking	Related Ticket
Associated Tasks	Related Ticket
Problems Tasks	Related Problem
Change Requests Tasks	Related Change Request

Workspaces

Once the indexed columns are created, the filtered views that are already present in workspaces (Web Part Pages/Site Pages) will start using the indexed columns and this should fix any threshold issues.

Different workspaces that may be affected:

- Staff Workspace
- Manager Workspace
- All Open Tickets
- All Closed/Resolved Tickets
- Add all other standard pages here

By default Archived Tickets list is not used in any workspaces. If needed, it is possible to create workspaces with index based filtered views similar to tickets list.

Reports

Currently, a report in the Crow Canyon Report Center cannot run if the number of items it is reporting on exceeds the list view threshold. It is possible to configure multiple reports to overcome this. For example, for a report like "Tickets by Category", create separate filtered views for each year (or month or quarter, etc.) and then create a report on each of these views to see "Tickets by Category" for each of those time periods.

Tiles and Arcs

Same as Reports.

Other Considerations

Crow Canyon Data Sync Tool

The Crow Canyon Data Sync tool is used to copy SharePoint data into a SQL database for archiving, auditing and reporting purposes. Reports can be created on this data using Microsoft Power BI and then these reports can be added to SharePoint pages. Once data is in SQL, it can be deleted form SharePoint. Power BI configurations can be done by Crow Canyon as a customization. Please read more on this tool from here:

https://www.crowcanyon.com/sharepoint-tools-web-parts/datasync-and-auditing-for-sharepoint/

Note: We can use this tool along with Archival and Indexing approaches

Search

SharePoint search is not limited by threshold. If search is enabled on the list, then it can be used to search for items in entire list (> 5000) based on keywords for reference. Please refer these links:

https://support.office.com/en-us/article/enable-content-to-be-searchable-d7ba92db-8618-43fe-87ee-adf03d973062

https://sharepoint.stackexchange.com/questions/230892/how-to-display-missing-search-box-in-list-view-in-sharepoint-2013

List Rollup

Crow Canyon has a custom app to combine data from multiple views (supports views from multiple lists as well). It can be used in some limited scenarios where there is specific data in different views and there is a need to roll it up and see it in one listing. It should be noted that this app is not designed to display thousands of items. Refer this manual for more details:

https://www.crowcanyon.info/nitro/appmanual_v2/list-rollup.html

Additional Options for SharePoint On-premises (SP 2010, 2013 and 2016)

Increase List View Threshold

On-premises versions of SharePoint allow administrators to increase the threshold value. This can be used as long as server performance is not impacted. Please refer to this article on how to increase the threshold value. Since this has some performance implications for the SharePoint server, please review the guidelines given in the article:

https://support.office.com/en-us/article/manage-large-lists-and-libraries-in-sharepoint-b8588dae-9387-48c2-9248-c24122f07c59

(refer section "How do I change the List View Threshold?")

Crow Canyon Cascaded Lookup

This is a custom field to enhance the functionality of the SharePoint standard lookup column. It has the option to load a filtered list of items in the lookup instead of the default behavior of always loading all the items from the lookup list. If the lookup list is beyond threshold limit, the standard lookup fails to render.

By using a filtered view based on indexed column, this Cascaded Lookup can overcome the threshold issue. This is applicable for lookup column scenario mentioned above. Additionally, loading only a filtered list improves the form loading time as lookup columns with many items slow down the form loading.

Note: This custom field is not available for SharePoint 2010