Education Standards Board South Australia

SharePoint 2019 Environment Health Check Report

Analysis Report

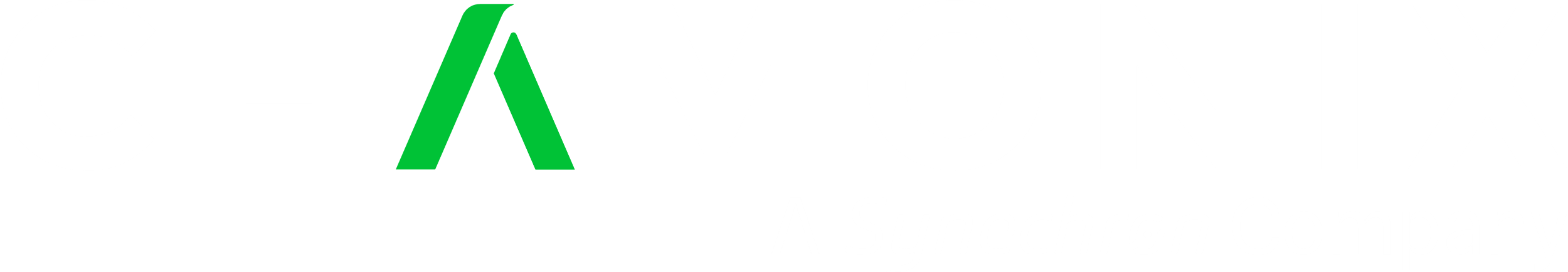
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Document Information

|  |  |
| --- | --- |
| **Document Owner** | Chamonix IT Management Consulting Pty. Ltd. |
| **Title** | SharePoint 2019 Environment Health Check Report |
| **Description** | This report presents the findings of a health check conducted on the Education Standards Board’s SharePoint 2019 environment. The health check aimed to identify the root causes of significant performance issues, including site and library unavailability, high CPU utilization, HTTP 503 errors, Security Token Service application failures, and other critical events  Reported Outages:   * Monday, 29 July 2024, at 8:53 AM * Wednesday, 04 September 2024, at 9:20 AM |
| **For Client** | Education Standards Board, South Australia |

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Related Documents

|  |  |  |
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| ID | Document Name | Version |
| 01 | SharePoint DB Shrink Tasks | 1.0 |

Definitions, Abbreviations & Acronyms

|  |  |
| --- | --- |
| Term | Definition |
| Crawling | In SharePoint search, the process by which the search system retrieves and processes content from SharePoint sites and any connected content sources. This process involves the search system scanning through the content to gather information and metadata, which is then used to build a searchable index |
| Indexing | In SharePoint search, indexing is the process of organizing and storing information from documents and other content so that it can be quickly retrieved during a search. |
| MinRole | MinRole in SharePoint 2019 is a feature designed to streamline the deployment and management of SharePoint farms. It uses predefined server roles to automatically configure services on each server based on its assigned role, such as Front-end, Application, or Distributed Cache. This approach simplifies deployment, enhances performance and reliability, and makes capacity planning and scalability easier. By optimizing service distribution, MinRole helps reduce latency and improve the overall stability of the SharePoint farm. |

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# Executive Summary

In November 2024, Chamonix was asked by the Education Standards Board (ESB) of South Australia to review their SharePoint production instances to investigate and analyse slowdowns and downtimes that their staff were reporting.

This has been carried out subsequent to the assessment by Chamonix staff on 20/07/2023. The outcomes and recommendations from this have been included in the [appendix](#_Appendices). They have been reviewed and amalgamated into this report. Some findings, such as server disk space management and anti-virus/malware scanning exclusions, were not in scope for the latest review. However, some remain outstanding and are listed below, along with the new findings.

The analysis was undertaken over a ten-day period and covered the server usage (CPU, RAM), logs (Windows Events, IIS, ULS), SharePoint configurations (Health Analyzer Rules, Scheduled Jobs, Security Updates, Installed Software, Resource throttling settings and customizations), and current-state analysis (Request Distribution, SharePoint Libraries Availability, RecordPoint Integration Impacts).

The analysis concluded that:

* The smallest production-ready MinRole farm requires four servers.
  + Currently, the SharePoint farm operates on a single server, which is ***not*** recommended for production due to the ***high risk*** of a single point of failure and the inability to deliver optimal performance for a document management and records management system of this size.
  + This setup jeopardizes business continuity and increases the potential for data loss, as it lacks disaster recovery support.
  + Transitioning to a MinRole farm with at least four servers is essential to mitigate these risks, ensure robust disaster recovery capabilities, and achieve optimal performance.
* The hierarchical structure of SharePoint sites with subsites has several downsides, including inflexibility and complex permissions management.
  + It also requires significant maintenance effort and is less scalable compared to modern flat architectures.
* These issues can lead to a poor user experience and increased administrative overhead. The SharePoint Teams web application, specifically the root site collection, which serves as the primary document repository, has grown to over 656GB.
  + This size significantly exceeds the recommended maximum of 200GB for optimal performance.
* The Document Libraries with the highest volume of documents do not adhere to Microsoft's recommended best practices.
* The customized resource throttling settings do not adhere to Microsoft's best practices.
  + These settings put additional strain on the SharePoint environment, leading to poor performance.
* There are no non-production environments – it is recommended to have Development (Single Server Farm) and Test (2 Server Farm) environments to enable correct development and testing lifecycle of any requirements including testing of Windows and SharePoint patching before going into production.
* Due to the lack of database free space, the recommendation is to shrink the Teams site content database, then reindex it
  + Due to the risks presented, Chamonix will not action any outlying tasks prior to establishment of a Non-Production Environment.

Based on these results, recommendations have been produced to either decrease the current issue’s impact or remove the impediment entirely. Of these recommendations, three are deemed **important** and **urgent** to resolve and the rest are deemed important, but not urgent to resolve. These recommendations can be found in the [Recommendations](#_Recommendations_1) section.

# Introduction

## Background

The Education Standards Board SharePoint 2019 environment is experiencing significant performance issues, leading to site and library unavailability. Provided error logs and CPU usage screenshots highlight critical events, including:

* High CPU utilization
* HTTP 503 errors
* Security Token Service application failures (Event ID 8306)
* Timer job failures (Event ID 6398)
* Inability to read application pool configurations (Event ID 2307)
* Shutdown of the application group in IIS (Event ID 2299)

This scope of work will conduct a health check to identify the root causes of these issues and provide a comprehensive examination of the environment.

## Objectives and Scope

The purpose of this engagement is to identify, and where possible within the allotted time, resolve performance issues in the Education Standards Board’s SharePoint 2019 environment. This will involve improving system performance, addressing critical errors, enhancing availability, and optimising configurations and integrations. The issues and remediations will be documented.

The scope of the work includes:

1. Examine CPU Usage for the Past 6 Months
2. Examine Windows Event Logs of the Past 6 Months
3. Examine IIS Logs
4. Examine ULS Logs
5. Examine and Identify Necessary Configurations of SharePoint Health Analyzer Rules
6. Examine Schedule Jobs and Run History
7. Examine Request Distribution
8. Verify Resource Throttling Settings and Identity Customisations
9. Examine SharePoint Libraries That Go Unavailable (e.g., C&I – ECS Investigations Library)
10. Examine Integrations with RecordPoint

# Recommendations

Based on the issues discovered in the Analysis section, some recommendations have been made to ESB to immediately reduce or remove the issues. Each of these recommendations are tasks that the ESB can undertake, ordered by their priority and their current impact on users. The priority categories are described below:

**Priority**

1. **Urgent and Important:** Do these tasks immediately.
2. **Important but Not Urgent:** Schedule these tasks.
3. **Urgent but Not Important:** Delegate these tasks if possible.

**User impact**

1. **High Impact:** Significant disruption to user activities, making essential tasks impossible and severely affecting productivity.
2. **Moderate Impact:** Noticeable inconvenience and delays, but users can still perform most tasks with some productivity loss.
3. **Low Impact:** Minimal disruption with little to no effect on user activities, allowing users to continue their tasks largely unaffected.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task | Priority | User Impact | Effort | Comments |
| Reorganize subsites and larger document libraries into separate site collections | Urgent and Important | Moderate | 15 days | **Impact of Task not being completed:** As the content database grows larger, site performance will decrease. Additionally, restructuring will become more difficult, requiring more time and effort. |
| Resolve issues in document libraries that exceed resource throttling thresholds, such as unique permissions and list view thresholds. | Urgent and Important | Moderate | Subject to the agreement and availability of business users | **Impact of Task not being completed:** As resource throttling limits are exceeded, performance will decrease, potentially disabling functionalities like sorting and filtering in the libraries. |
| Address resource throttling misconfigurations in SharePoint Central Admin | Urgent and Important | Moderate | 2 Hours | This must be done after addressing the identified issues in the document libraries that violate the resource throttling thresholds  **Impact of Task not being completed:** As resource throttling limits are exceeded, performance will decrease, potentially disabling functionalities like sorting and filtering in the libraries. |
| Shrink the Teams site content database, then reindex it | Important but Not Urgent | High | Shrink 18 Hours  Reindex 9 hours | Action items are provided in the document “SharePoint DB Shrink Tasks”  **Impact of Task not being completed:** content database will keep expanding due to unused space from deleted records and other operations, which will remain unutilized  **Note**: Due to the absence of non-production environments, there is a significant risk in proceeding without testing these changes. This risk aversion stems from the potential impact on the production system, as there is no safe environment to validate the changes beforehand.  **Due to this risk, this task is not something that Chamonix will action prior to establishment of a Non-Production Environment.** |
| Remove third party applications from the server | Important but Not Urgent | Low | 2 Hours | **Impact of Task not being completed:** Potential security risks and performance issues |
| Transition to a highly available MinRole farm with at least four servers. | Important but Not Urgent | High | 6 Days | **Impact of Task not being completed:** The single server farm will remain under immense pressure. This setup Jeopardizes business continuity and increases the potential for data loss, as it lacks disaster recovery support.  Microsoft guide to MinRole topologies in included in the [appendix](#_Appendices) section. |
| Non-Production Environment(s) | Important but Not Urgent | Low |  | **Impact of Task not being completed:**  If non-production environments are not established, there is a high risk of deploying untested changes directly into production, potentially causing system failures and significant downtime. This lack of proper testing can lead to critical disruptions in business operations and negatively impact user productivity. |
| Install RecordPoint outside the SharePoint farm | Important but Not Urgent | High |  | **Impact of Task not being completed:** With RecordPoint installed on a single server SharePoint farm, the system is under significant strain, leading to performance bottlenecks and slower response times. Expect regular server downtime for maintenance, impacting availability. Additionally, this setup poses higher security risks and lacks scalability, making it difficult to handle future growth and increasing workloads |
| large lists need to have Indexed Columns | Important but Not Urgent | Low | 2 Hrs | **Impact of Task not being completed:** large lists can suffer from slow performance and may exceed the List View Threshold, causing errors and preventing users from accessing data. |
| Reconfigure full crawl schedule to run monthly. | Important but Not Urgent | Low | 1Hr | **Impact of Task not being completed:** Performance issues and potential server downtime, affecting user experience. |

# Analysis

## CPU and RAM Usage

The objective is to identify outliers in CPU utilization for SharePoint 2019 Application server over the last six months.

### Process

CPU and RAM utilization graphs can be obtained by submitting a request to the Server and Network support team. The request should include the server’s name EECSBWFE02, and specific date or date range.

### Findings

#### Sustained High CPU utilization on 29th July 2024

From approximately 8:25 AM to 8:50 AM on July 29, there was a period of sustained high CPU usage, which may have contributed to the performance issues experienced that day.A graph with a line

Description automatically generated with medium confidence

#### Sustained High CPU utilization on 04th September 2024

Starting from around 9:00 AM on September 4, there was sustained high CPU usage, consistently hovering around 80% without significant dips. This indicates a continuous and resource-intensive process running during this period. The drop in usage from 9:25 AM to 9:40 AM indicates that the server was down during that time.

A graph with a line

Description automatically generated with medium confidence

#### High CPU utilization spikes for the past six months

Over the past six months, there have been numerous instances of high CPU usage spikes, often reaching or nearing 100%. Notably, on September 4th, there was sustained high CPU usage, indicating a significant impact on performance that day. The factors contributing to these high CPU spikes are detailed in the following sections.A graph with orange lines

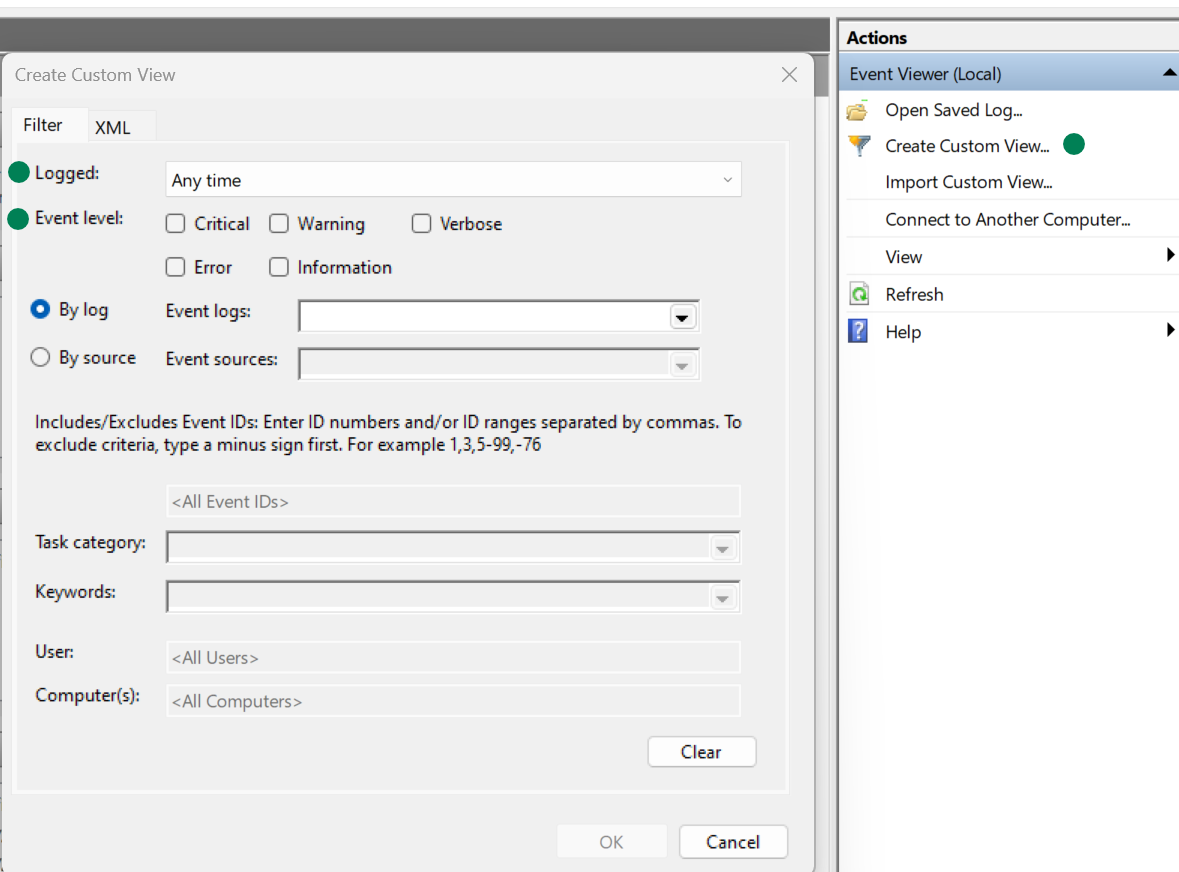
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## Windows Event Logs Analysis

The objective is to Identify processes and requests causing high CPU demand on Application server.

### Process

Establish a remote desktop connection to the server EECSBWFE02 and open the Event Viewer. Then, expand the Windows Event Logs and select Applications. In the right Actions pane, select Create Custom View. On the next screen, choose the event levels Critical, Warning, and Error, and set the timeframe in the Logged section.



### Findings

Over 1000 SharePoint and RecordPoint failures can be identified each day, primarily due to the following factors.

#### Error - Library Exceeding List View Threshold

Below is an event viewer application log entry indicating that the file "Brief Provider Approval Refusal APP" was not added to RecordPoint because the library has exceeded the threshold for unique permissions.

A screenshot of a computer

Description automatically generated

Below are some items from the ECS Investigations library that may have unique permissions, as indicated by the library permissions.A screenshot of a computer

Description automatically generated

Below is the file highlighted in the event viewer application log entry above that has unique permissions.A screenshot of a computer

Description automatically generated

#### Error – Library exceeding list view threshold

Below is the recommended Resource Throttling threshold for List Unique permissions configured in SharePoint Central Administration.A screenshot of a computer

Description automatically generated

Below is an event viewer application log entry indicating a failure to execute a search query because the number of records to be returned exceeds the list view threshold limit of 5,000 in the RecordPoint web application.

A screenshot of a computer

Description automatically generated

Below is another example of an event viewer application log entry indicating a failure to execute a RecordPoint internal query because it exceeded the list view threshold.A screenshot of a computer

Description automatically generated

Below is the default resource throttling threshold for List view configured in the RecordPoint web application within SharePoint Central Administration.A screenshot of a computer

Description automatically generated

## SharePoint Health Analyzer Rule Warnings

The objective is to identify Health Analyzer rule findings and provide recommendations to resolve them.

### Process

Health Analyzer Rule warnings can be viewed in Central Administration.

1. Establish a remote desktop connection to the server EECSBWFE02 and search for Central Administration in the Start menu.
2. On the Central Administration home page, click on the Monitoring link.
3. Under the Health Analyzer section, click on Review problems and solutions.

### Findings

#### 

Some Content databases are grown larger

Below is a Health Analyzer finding indicating that the SharePoint Team site content database size has exceeded 100GB. The maximum recommended size for optimal performance is 200GB, but it is currently at 600GB.A screenshot of a computer

Description automatically generated

The following table shows the sizes of the content databases attached to site collections in SharePoint web applications.

|  |  |  |
| --- | --- | --- |
| Database Name | Site Collection Name | Size |
| SP\_Teams\_WSS\_Content\_4c3f170d5cc94702a5d965f15e3e4a2f | Team Site | 672,136 MB |
| WSS\_RPContent\_20220713114222 | RecordPoint | 22,405 MB |
| WSS\_RPContent\_20220713115409 | RecordPoint | 3,057 MB |
| WSS\_Content\_RecordPoint\_d7bb001cbd4e4bbb805aaa7065dc85a1 | RecordPoint | 264 MB |
| SP\_Portal\_WSS\_Content\_92b6ee2f9925437599738df0597b20e1 | Portal | 3,208 MB |
| SharePoint\_AdminContent\_8adcfe76-0f8f-4be1-8bd1-ce6256de0eea | Central Administration | 328 MB |
| WSS\_Content | Default | 136 MB |

Below is an overview of the subsites nested under the team site collection.A screenshot of a computer

Description automatically generated

Below is an overview of the Team Site Collection Storage Metrics, displaying the storage usage.A screenshot of a computer

Description automatically generated

### Recommendations

* Review and Clean Up: Regularly check for and remove unnecessary or duplicate data.
* Restructure SharePoint Sites into Separate Site Collections and Content Databases: The current hierarchical SharePoint architecture, with one site collection containing most data and nested subsites, limits distribution across multiple databases. To address this, all subsites will be restructured into separate site collections. Specifically, the Early Childhood Services document library will be moved into multiple site collections to keep each database ideally under 100GB. This project will involve migrating content, requiring planning, testing, and outage management.
* Shrink Database: The content database for the Teams site has grown to over 600GB, which is more than typically needed for a 500000-document repository. Shrinking the database can help reclaim unused space from deleted records and other operations.

Shrinking a database can be necessary for several reasons:

* Reclaiming Unused Space: Over time, databases can accumulate unused space due to deleted records, dropped tables, or other operations. Shrinking helps reclaim this space, making it available for other uses.
* Improving Performance: In some cases, reducing the size of the database can improve performance, especially if the database has grown significantly larger than needed.
* Maintenance: Regular maintenance, including shrinking, can help keep your database in good health by reducing fragmentation and ensuring efficient use of resources.

However, it’s important to note that shrinking a database can also cause fragmentation, which might negatively impact performance. Therefore, it’s often recommended to rebuild indexes after shrinking. Action items to perform a database shrink are provided in the document “SharePoint DB Shrink Tasks”

## Scheduled Jobs and Run History Analysis

The objective is to identify the schedules and run times of all scheduled jobs to assess their impact on performance.

### SharePoint Search jobs

#### Process

To view the full crawl job run history in SharePoint 2019 Central Administration, follow these steps

Establish a remote desktop connection to the server EECSBWFE02 and open Central Administration.

In the Application Management section, click on Manage Service Applications.

On the Manage Service Applications page, click on the Search Service Application.

In the Crawling section, click on Crawl Log to view the history of crawl jobs, including full crawls.

#### Findings

##### The SharePoint full crawl job runs for a long time

Below is the retained execution history of SharePoint full crawls since August 7, 2024. These crawls are scheduled to run every Sunday and typically take the entire day to complete. Occasionally, the crawl extends into Monday, affecting application performance during business hours.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Started** | **Completed** | **Duration** | **Successes** | **Warnings** | **Errors** |
| 11/03/2024 4:55 | 11/03/2024 18:44 | 13:48:09 | 496,289 | 6,910 | 42 |
| 10/27/2024 4:56 AM | 10/28/2024 2:40 PM | **33:43:54** | 488,376 | 6,700 | 4,106 |
| 10/20/2024 4:55 AM | 10/20/2024 5:54 PM | 12:58:57 | 213,860 | 3,103 | **283,020** |
| 10/13/2024 4:55 AM | 10/14/2024 3:36 AM | 22:40:19 | 490,811 | 6,727 | 116 |
| 10/06/2024 4:55 | 10/06/2024 18:43 | 13:48:16 | 491,952 | 6,759 | 52 |
| 09/29/2024 4:56 AM | 9/29/2024 9:43 PM | 16:47:41 | 490,765 | 6,707 | 56 |
| 09/22/2024 4:56 AM | 9/22/2024 6:58 PM | 14:01:59 | 489,306 | 6,670 | 71 |
| 09/15/2024 4:55 AM | 9/15/2024 6:52 PM | 13:57:26 | 488,516 | 6,649 | 85 |
| 9/08/2024 4:56 | 9/08/2024 6:20 PM | 13:23:49 | 486,821 | 6,613 | 51 |
| 9/01/2024 4:56 | 9/01/2024 7:24 PM | 14:28:36 | 486,186 | 6,568 | 80 |
| 08/25/2024 4:55 AM | 8/25/2024 6:56 PM | 14:00:54 | 484,806 | 6,529 | 79 |
| 08/18/2024 4:55 AM | 8/18/2024 9:51 PM | 16:55:22 | 484,019 | 6,463 | 75 |
| 8/11/2024 4:55 | 8/11/2024 7:47 PM | 14:52:03 | 482,842 | 6,392 | 77 |

Below is a summary of SharePoint crawls and their schedules.

* Continuous Crawl: Runs every 15 minutes and Crawls between 400 and 1,200 items per day.
* Incremental Crawl: Runs every 4 hours starting from 12 AM daily and Processes 50 to 70 items per crawl.
* Full Crawl: Runs on every Sunday and Crawls around 500000 items.
* Memory Usage: The search process generally requires 8.5GB of memory to run its related processors on the server. The server has a total memory of 32GB, with 70% utilized (22.4GB). Out of the 22.4GB of utilized memory, the search processor uses 8.5GB, which accounts for 37% of the utilized memory.

#### Recommendations:

it’s generally recommended to run full crawls only when necessary. Full crawls are resource-intensive and can significantly impact performance. With enabled continuous crawl that keeps the index up to date with frequent changes. Since the continuous crawl is enabled, it does not need to run every week. Instead, it can be run every month.

### Obsolete Scheduled Tasks

#### Process

Here are the steps to open Task Scheduler on the SharePoint application server and view scheduled jobs

1. Establish a remote desktop connection to the SharePoint application server.
2. Press the Windows key + R to open the Run dialog and Type taskschd.msc and press Enter.
3. In the Task Scheduler window, expand the Task Scheduler Library on the left pane.
4. A list of folders will appear. Click on each folder to view the scheduled tasks within them. The middle pane will display the tasks, showing details like triggers, actions, and status.

#### Findings

##### User Feed Synchronization

There are multiple user feed jobs in Task Scheduler, but nothing is configured in Internet Explorer (IE) feeds, despite automatic feed updates being enabled. A screenshot of a computer

Description automatically generated

Below is an explanation of how feeds are enabled and the related configurations in Internet Explorer

.A screenshot of a computer screen

Description automatically generated

Possible causes and solutions for having many user feed schedules in the Task Scheduler include:

* Residual Tasks: Sometimes, tasks remain in Task Scheduler even after feeds are removed from IE. They can be manually deletes these tasks if they are no longer needed.
* Corrupted Task Scheduler Entries: Corrupted entries can cause tasks to appear without corresponding configurations in IE. You can try deleting these tasks and re-enabling the feed updates in IE.

##### Microsoft Edge Update Tasks

Running MicrosoftEdgeUpdate.exe daily on a SharePoint production server is generally not recommended. Here are a few reasons why:

* Resource Usage: Regular updates can consume CPU, memory, and network bandwidth, potentially impacting the performance of your SharePoint server.
* Stability and Compatibility: Frequent updates might introduce changes that could affect the stability or compatibility of your SharePoint environment, especially if the updates include new features or significant changes.
* Security Concerns: While keeping software up to date is important for security, it’s crucial to balance this with the need for a stable and predictable server environment.

##### OneDrive Standalone Update and Reporting Tasks

OneDrive Standalone Update and Reporting Task jobs are scheduled to run daily but have not started as expected because the launch conditions are not met. Since these jobs have not executed for some time, it is assumed they are residual or corrupted and can be safely disabled or deleted.

## Request Distribution Analysis

The objective of this section is to determine the distribution of requests across WFEs.

### Process

1. Establish a remote desktop connection to the server “EECSBWFE02”.
2. Open Central Administration at *http://eecsbwfe02:5000/default.aspx*, navigate to “System Settings".
3. Under the Servers section, select “Manage servers in this farm”.

### Findings

#### Performance Challenges in a Single Server Farm

In this single server farm, both SharePoint and RecordPoint applications are hosted on the same server, leading to excessive load and performance issues. This setup not only affects the availability and security of RecordPoint but also causes site unavailability due to high resource utilization, impacting both SharePoint and RecordPoint services.

A screenshot of a computer

Description automatically generated

### Recommendations

Adding a Web Front End (WFE) server to a single server farm in SharePoint 2019 can bring several benefits:

* Improved Performance: A WFE server handles web page requests from users, which can significantly reduce the load on the main server. This leads to faster response times and a better user experience.
* Scalability: As your organization grows, adding more WFE servers can help manage increased traffic and workloads. This ensures that the system remains responsive even with a higher number of users.
* Load Balancing: With multiple WFE servers, you can implement a Network Load Balancer to distribute requests evenly. This not only improves performance but also enhances reliability by preventing any single server from becoming a bottleneck.
* Simplified Maintenance: Maintenance tasks can be performed on one server at a time without affecting the overall availability of the SharePoint farm. This makes it easier to apply updates and perform other administrative tasks.

## Resource Throttling Settings and Customizations Review

The objective is to assess the impact of resource throttling settings on the environment.

### Process

1. Establish a remote desktop connection to the server EECSBWFE02.
2. Open Central Administration at [*http://eecsbwfe02:5000/default.aspx*](http://eecsbwfe02:5000/default.aspx)*.*
3. Navigate to “Application Management”.
4. Select “Manage web applications.”
5. Select the desired web application.
6. Select “General Settings” then “Resource Throttling.”

### Findings

#### High List View Threshold Causing Performance Issues

Microsoft recommends that the List View Threshold is set to 5,000 to maintain optimal user performance. ESB’s configuration of this setting has the value increased to 150,000. When large lists are queried, they can consume significant server resources, potentially impacting the performance of the entire SharePoint site.

Below is the Resource Throttling configuration in the SharePoint Central Administration.A screenshot of a computer

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### Recommendations

* As per the Microsoft recommendations included in this article [Software boundaries and limits for SharePoint Servers 2016 and 2019 - SharePoint Server | Microsoft Learn](https://learn.microsoft.com/en-us/sharepoint/install/software-boundaries-limits-2019) list view threshold should be limited to 5000.
* The main document libraries contributing to these issues are ECS Investigations in Compliance and Investigations, and Services Documents in Early Childhood Services. The best approach is to manage permissions via folders and limit the records returned in library views by adding filters. More recommendations can be found in the section on Resource Throttling Settings and Customizations Review.
* Limit the list view threshold to 5000 or a slightly higher value, as the current configuration is not recommended. While a SharePoint 2019 document library can hold up to 3 million files, the library structure should ensure that any query returns fewer than 5000 records. The list view threshold should only be reduced after making the necessary changes. Best practices for organizing documents in the library are detailed in the SharePoint Libraries Availability Analysis section.

## SharePoint Libraries Availability Analysis

The goal is to analyse and recommend best practices to ensure the availability of SharePoint and RecordPoint lists and libraries.

### Process

1. Navigate to the SharePoint site.
2. Open the document library for which you want to check version settings.
3. In the Library Settings page, under the General Settings section, click on Versioning settings.

### Findings

#### Resource-Intensive Views Impacting Library Performance

The ECS Investigations library contains approximately 60,000 documents, with many views returning more than 5,000 documents in a single query. Notably, the 'AllDocsNoFolders' view, which returns documents without folders, should not be accessible to non-admin users as it significantly impacts performance.

#### Excessive Versioning in SharePoint Libraries Consuming Space

Below is a list of Libraries with more documents

|  |  |  |  |
| --- | --- | --- | --- |
| Site Name | Library Name | Documents | Versions |
| Early Childhood Services  http://eecsrsb2019-teams.sa.gov.au/ecsaar | Services Documents | 237279 | 50 |
| Compliance and Investigations  http://eecsrsb2019-teams.sa.gov.au/complaints | ECS Investigations | 64655 | 200 |
| Schools  http://eecsrsb2019-teams.sa.gov.au/schools | School Documents | 61864 | 5 |

Having documents with more than 10 versions in a SharePoint library can impact both SharePoint and RecordPoint in several ways:

SharePoint:

* Storage Consumption: Each version of a document consumes additional storage space. With over 200 versions, the storage requirements can increase significantly.
* Performance: Managing a large number of versions can affect the performance of the library, especially during operations like saving, retrieving, or searching for documents.

RecordPoint

* Comprehensive Syncing: RecordPoint typically syncs all versions of documents, including both major and minor versions. This ensures thorough records management but also means that the storage and performance impacts are mirrored in RecordPoint.

#### RecordPoint Libraries Exceeding Query Limits

The error shown below in RecordPoint indicates that the record search failed due to exceeding the resource throttling threshold

A screenshot of a computer

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The following screenshot shows the where the records are held in RecordPoint and the accompanying database.

A screenshot of a computer

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### Recommendations

Strategies to manage large lists

* Create views: Filter the library views to limit the number of documents returned. Documents can be filtered based on the list fields.
* User folders: Try and organize the documents into folders this will limit the number of documents returned in a query
* Index list columns: e: g the library ECS Investigations has the following automatically created index columns and it would be good to review and index the columns that are most used and use to filter the contents of the list views.

## RecordPoint Integration Impact Analysis

The objective is to identify the impact of RecordPoint integrations on the performance of the SharePoint environment.

### Process

1. Establish a remote desktop connection to the server EECSBWFE02
2. Task Manager: Press Ctrl + Shift + Esc to open Task Manager.
3. Event Viewer: Press Windows key + R to open the Run dialog. Type eventvwr and press Enter.
4. Find Application pool: Take note of the PID in the task manager that is running the IIS worker process.
5. Press Windows key + R to open the Run dialog. Type cmd and press Enter. Type the command "appcmd list wp".
6. Identify the application pool name with the PID. Find the application from the application pool name: Press Windows key + R to open the Run dialog. Type inetmgr and press Enter. Expand sites and check properties.

### Findings

#### Resource intensive RecordPoint requests

The following scenario was identified during the day, showing high CPU utilization caused by the RecordPoint application.

Task Manager screen capture indicates the high memory utilization for the IIS Worker Process.A screenshot of a computer

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A screenshot of a computer

Description automatically generated

The following screen capture indicates that the RecordPoint application pool name, running under process ID 18784, is responsible for the high memory utilization

A screen shot of a computer

Description automatically generated

The following screen capture indicates the RecordPoint IIS site running under the application pool name ‘SharePoint – record’.A screenshot of a computer

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### Recommendations

* Host RecordPoint on its own server. this will reduce the burden on the SharePoint Application server and enhance the site availability, security and performance.

## SharePoint server security updates

### Process

1. Establish a remote desktop connection to the server EECSBWFE02. Open Update history in settings.

### Findings

#### The SharePoint application server and cumulative updates are current

* Latest Security updates:29/10/2024
* Latest Cumulative updates on 29/10/2024

A screenshot of a computer

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## SharePoint Server Installed Software

### Process

1. Establish a remote desktop connection to the server EECSBWFE02.
2. Open control panel and navigate to Programs and features.

### Findings

#### Third-Party Software Affecting Server Performance

Installing multiple applications like Google Chrome, Internet Explorer, Sharegate Migration Tool, and SharePoint Designer on a single SharePoint 2019 server can impact performance and is generally not considered best practice. Here are some reasons why and recommendations:

* Resource Consumption: Each application consumes CPU, memory, and disk resources, which can affect the performance of your SharePoint server, especially under load.
* Security Risks: Having multiple applications increases the attack surface, potentially exposing your server to security vulnerabilities.
* Minimal Installation: Only install essential applications on your SharePoint server. For instance, use a dedicated machine or VM for running Sharegate Migration Tool during migrations.

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## IIS Logs Analysis

### Process

1. Establish a remote desktop connection to the server EECSBWFE02.
2. Navigate to the “E” drive and open the folder “IIS Logs”.

### Findings

#### Limited HTTP Analysis Due to Disabled ETW and Incomplete Logs

The objective is to identify HTTP transactions and areas for optimization. ETW (Event Tracing for Windows) is not enabled for any IIS sites, which limits the ability to analyse past performance metrics. Additionally, nothing was found in the logs that could relate to the current performance issues.

A screenshot of a computer

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### Recommendations

It is recommended to enable ETW (Event Tracing for Windows) to enhance monitoring and troubleshooting capabilities. Additionally, ETW logs can capture a broad spectrum of data, including performance metrics and error details.

## ULS Logs Analysis

### Process

1. Establish a remote desktop connection to the server EECSBWFE02.
2. Navigate to the “E” drive and open the folder named “Tools”.
3. Open ULS viewer and click on “Open Logs in Realtime”

A screenshot of a computer

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### Findings

#### Insufficient Logs Hindering Error Analysis in SharePoint

The objective is to identify common errors in the SharePoint environment. Currently, there are only two days' worth of logs on the server, which is insufficient for thorough analysis.

### Recommendations:

* Maintain at least the past 15 days of log files. This will provide a more comprehensive dataset, enabling more effective troubleshooting of any issues encountered.

# Conclusion

Over a ten-day period, Chamonix conducted an analysis over twelve key areas. Where sufficient data was available, Chamonix provided the key findings for each area and recommendations to follow to mitigate the possible impacts from the issues. Summarising these smaller recommendations, Chamonix then created a list of key recommendations to address immediately, which when completed will address most of the performance issues. Using these recommendations, ESB can target the issues their users are facing, and validate that the change has been effective using the “Process” steps included in each analysis section.

Handover was provided to ESB by Chamonix on Monday 18 November 2024.

# Appendices

* Below is a summary of the CPU and Memory utilization for the past six months



* Action items for SharePoint Teams site content database shrink are provided in the document “[SharePoint DB Shrink Tasks](http://eecsrsb2019-teams.sa.gov.au/Corporate/inform/Maintenance/SharePoint%20OS%20Maintanence/SP%20Health%20Check%20November%202024/SharePoint%20DB%20Shrink%20Tasks.docx)”
* Microsoft guide to MinRole topologies. <https://learn.microsoft.com/en-us/sharepoint/technical-reference/technical-diagrams>



* Outcome and Recommendations from the Assessment on 20/07/2023

