Monitoring Microsoft SharePoint

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

Microsoft SharePoint is a collection of products and software elements that include, Internet Explorer based collaboration functions, process management modules, search modules and a document-management platform. SharePoint can be used to host web sites that access shared workspaces, information stores and documents, as well as host defined applications such as wikis and blogs. All users can manipulate proprietary controls called "web parts" or interact with pieces of content such as lists and document libraries.

If any of the services offered by Microsoft SharePoint malfunction, it could deny users access to critical organizational data, thereby hampering their productivity and obstructing the achievement of business goals. It is therefore imperative that the Microsoft SharePoint server is monitored 24x7 for performance deficiencies.

eG Enterprise offers two specialized monitoring models - one for each of the SharePoint versions - Microsoft SharePoint 2007 and Microsoft SharePoint 2010.

This document discusses both these models in great detail.

2

Chapter 2: Administering eG Manager to monitor Microsoft SharePoint 2007 Server

1. Log into the eG administrative interface.
2. eG Enterprise cannot automatically discover Microsoft SharePoint 2007 server. You need to manually add the server using the **COMPONENTS** page (see Figure 2.1) that appears when the Infrastructure -> Components -> Add/Modify menu sequence is followed. Remember that components manually added are managed automatically.

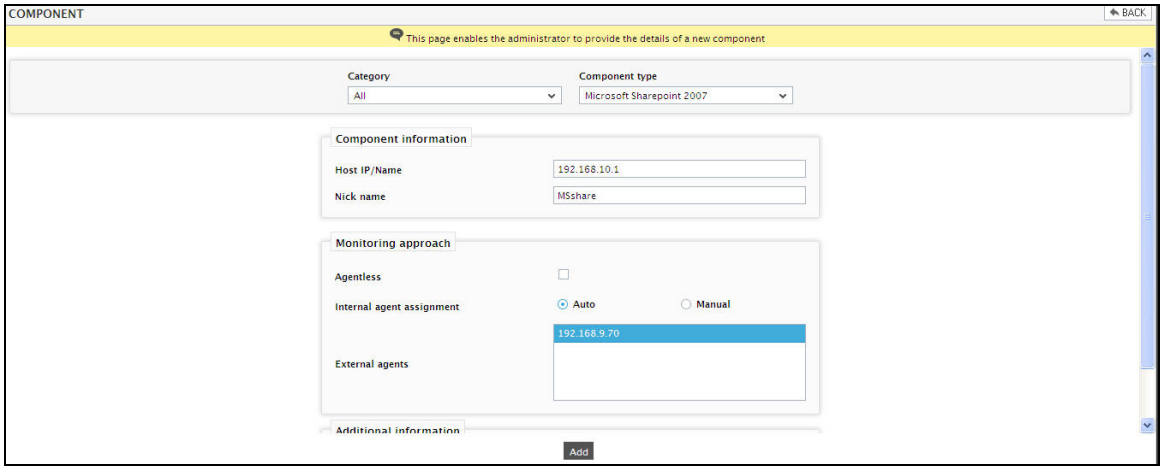


Figure 2.1: Adding the Microsoft SharePoint 2007 Server

3. Next, signout of the eG administrative interface.

3

Chapter 3: Monitoring SharePoint2007

The Microsoft SharePoint 2007 monitoring model continuously monitors the performance of the SharePoint 2007 server, and proactively alerts administrators to issues.

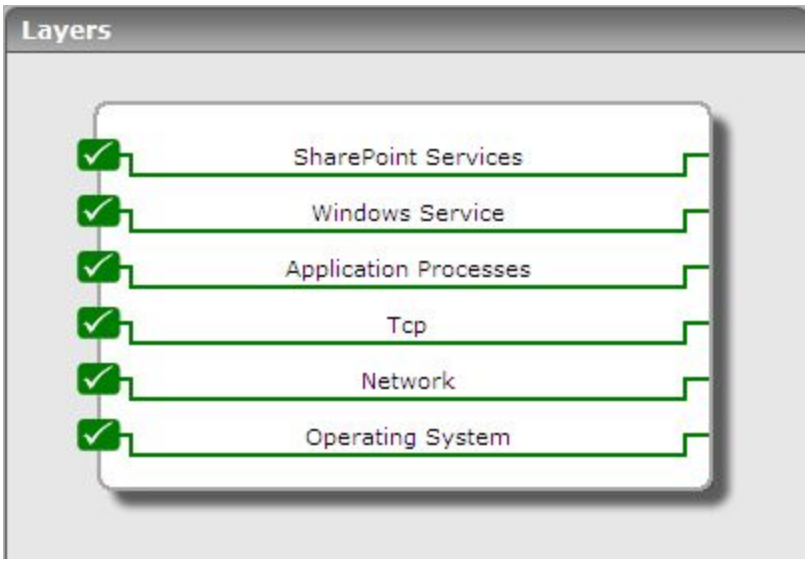


Figure 3.1: The layer model of SharePoint

Each layer of Figure 3.1 is mapped to a wide variety of tests that report a number of metrics related to the health of the SharePoint server in question. Using these metrics, the administrators can find quick and accurate answers for the following performance queries:

- Are there too many documents in the first and second queues of the archival plugin? Do these numbers indicate that the crawler is in a starved state?
- Were any error documents returned by the archival plugin?
- How well is the document converter functioning? Are too many conversion requests pending on the converter?
- How is the Excel calculation service performing? Is it responding to requests quickly? How effectively is the service using its cached charts? Are its workbook caches adequately sized?
- Are the Excel Web Access and Excel Web Services components experiencing any slowdowns in request processing?

- Is the content managed by SharePoint adequately indexed? Are search queries been successfully executed or are too many queries failing?
- Is the gatherer service in a back-off state? If so, why?
- Are your site hit frequency rules very rigid? Are they creating too many delayed documents?
- Are too many threads waiting for documents?
- Are too many threads waiting for a response from the filter process? Is it owing to a network issue or is it because they are bound to a hungry-host?
- Was the gatherer unable to access any documents? If so, how many times?
- Are there too many unprocessed documents on the gatherer?
- Is the SharePoint Publishing Cache well-tuned? Is the cache hit ratio high?

The sections to come discuss the tests associated with the **SharePoint Services** layer only, as the remaining layers have been dealt with elaborately in the *Monitoring Unix and Windows Servers* document.

3.1 The SharePoint Services layer

Using the tests mapped to this layer, administrators can periodically audit the service levels achieved by the components engaged in the searching and indexing of content managed by SharePoint. These components include:

- The Office Server Search Archival Plugin
- The Office Server Search Schema Plugin
- The Office Server Search Indexer Catalogs
- The Office Server Search Gatherer

Similarly, the layer also sheds light on the core components of the SharePoint Excel Services – namely, the Excel Calculation Service, the Excel Web Access, and the Excel Web Service.

In addition, the layer monitors the health of the object caches and the document converters on SharePoint 2007.

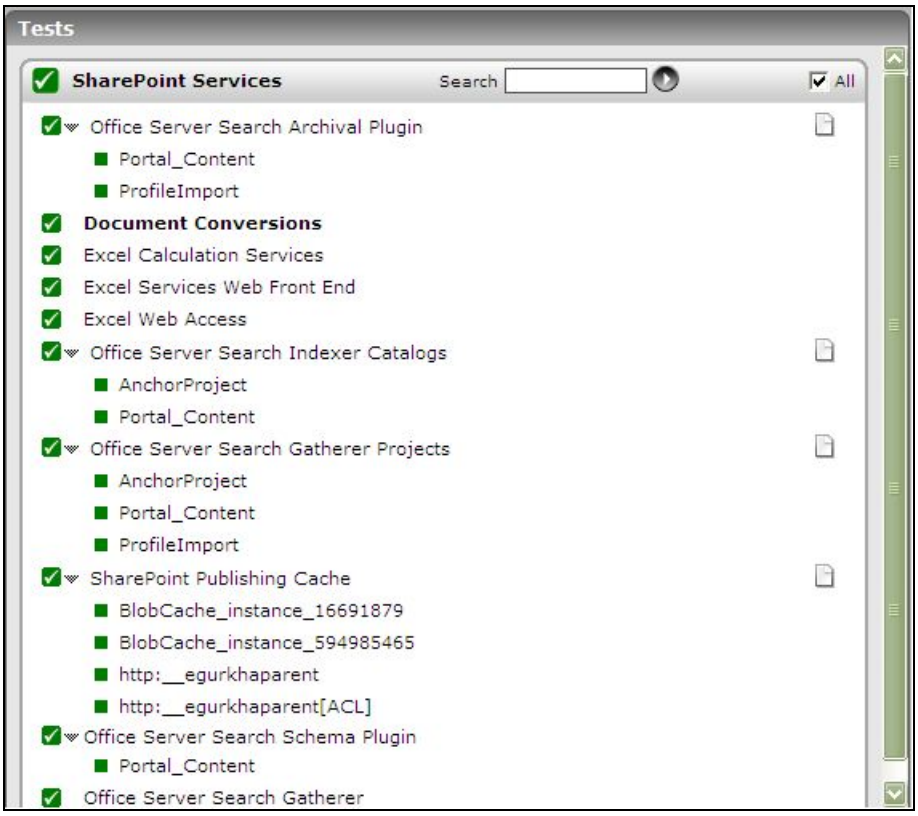


Figure 3.2: The tests mapped to the SharePoint Services layer

3.1.1 Office Server Search Archival Plugin Test

The Search feature of the MOSS 2007 not only makes it possible to search through content, documents, and people within the SharePoint sites, but also through external sources such as Windows file shares, public Microsoft Exchange server folders, and standard web sites. This is what makes MOSS 2007 that much more valuable to users.

The **Archival** and **Schema** plugins are internal components of the MOSS Search engine, typically responsible for processing the metadata of indexed documents. By monitoring these components, administrators can efficiently evaluate how well the MOSS search feature is functioning, identify irregularities early, and fine-tune the MOSS server to ensure peak performance of the search engine.

The **Office Server Search Archival Plugin** test focuses on the archival plugin component, and helps assess its processing ability.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the *ProfileImport and Portal_Content* instances

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active documents in first queue	Indicates the number of documents that are actively using the first queue of the plugin.	Number	One of the more difficult tasks that a Search admin faces is figuring out how to build out the myriad of crawl schedules needed to keep the content on the SharePoint server freshly indexed. When you are building out these schedules you will want to keep a close eye on the system and slowly add new schedules to minimize starving the crawl of resources while maxing out the utilization of the crawler. Starvation for Enterprise Search is defined as the crawlers inability to allocate another thread to retrieve the next document in the queue of work. This can be caused by resource (I/O) contention on the SQL machine, too many hosts concurrently participating in the crawl, "hungry" hosts that do not quickly relinquish a thread and finally back-ups (since crawls are paused during this time).

Measurement	Description	Measurement Unit	Interpretation
			The values of these measures typically help determine whether the crawler is in a starved state or not. If they are both consistently at 500 for the Portal_Content instance or 50 for the ProfileImport instance, then you are in a starved state and you are likely to be bottle-necked in SQL for I/O on the Crawl DB drive. Look into tuning SQL for better I/O.
Active documents in second queue	Indicates the number of documents actively using the second queue of the plugin.	Number	
Error documents	Indicates the number of documents which currently returned errors from the plugin.	Number	Ideally, this value should be low.
Bulk insert sessions	Indicates the number of active bulk insert sessions to the database server.	Number	
Active queue length	Indicates the number of documents currently available in the active queue.	Number	
Blocked documents	Indicates the number of documents currently waiting for a queue.	Number	

3.1.2 Document Conversions Test

A document converter is a custom executable file that takes a document of one file type, and generates a copy of that file in another file type. For example, a document converter might take a Microsoft Office Excel file and use it to generate a Microsoft Office PowerPoint file. Using document converters, you can transform your content into different versions to suit your business needs.

Because document conversions can be resource intensive, Office SharePoint Server 2007 relies on two services, DocConversionLoadBalancerService and DocConversionLauncherService, to

manage the load balancing, prioritizing, and scheduling of the conversions. When a user initiates a document conversion, either through the user interface or object model, Office SharePoint Server 2007 passes the document conversion request to these two services. It is the DocConversionLauncherService service that actually calls the document converter. When called, the document converter takes the original file and generates a converted copy. Office SharePoint Server 2007 then takes the converted copy and performs certain post-processing actions on it. These actions include:

- Adding the metadata from the original file to the converted copy.
- Adding metadata that identifies the original file and document converter used to generate the converted copy.
- Notifying the specified people that the conversion has been performed.
- Placing the converted copy into the same document library as the original file.

This test monitors the document conversion process of the SharePoint server and enables administrators to determine how well the converter is able to process document conversion requests.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Incoming E- mail messages	Indicates the rate at which e-mail messages	E-mails/Sec	

Measurement	Description	Measurement Unit	Interpretation
processed	have been received and processed by SharePoint.		
Pending conversions	Indicates the number of document conversions that are currently pending.	Number	Ideally, the value of this measure should be low. A high value for the measure could indicate a processing bottleneck.

3.1.3 Excel Calculation Services Test

Excel Services is built on the SharePoint products and technologies platform. There are three core components of Excel Services:

- Excel Calculation Service
- Excel Web Access
- Excel Web Service

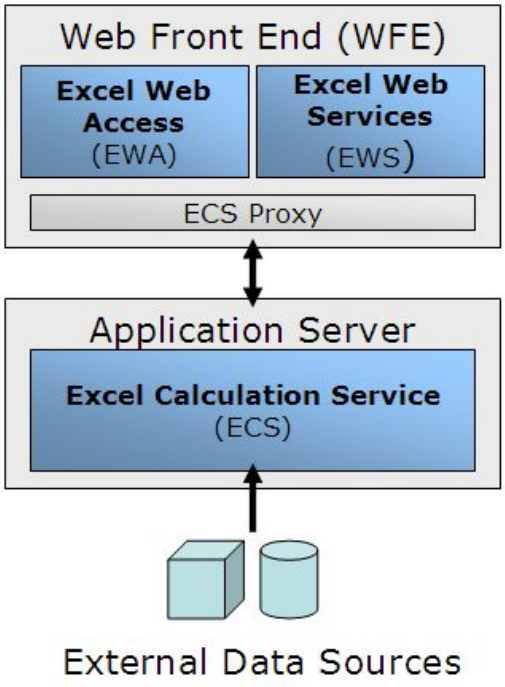


Figure 3.3: Excel services architecture

The role of Excel Calculation Service is to load workbooks, calculate them, call custom code (user-defined functions) and refresh external data. It also maintains the session state for interactivity. Excel Calculation Services maintains a session for the duration of interactions with the same workbook by a user or caller. A session is closed when the caller explicitly closes it or when the session times out on the server. Excel Services caches the opened Excel workbooks, calculation states, and external data query results, for improved performance when multiple users access the same set of workbooks.

In order to determine the quality of the user experience with the Excel Calculation Service, it is essential to know how smooth the user-service interaction is, how quickly the service is able to process the requests, and how effectively the service utilizes its caches. The **Excel Calculation Services** test closely monitors the aforesaid performance parameters, and accurately gauges the health of the service.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Requests with errors	Indicates the number of requests to the Excel Calculation Service that are returned with errors per second.	Requests/Sec	Ideally, the value of this measure should be low.
Average number of	Indicates the average	Sessions/Sec	

Measurement	Description	Measurement Unit	Interpretation
sessions opened	number of sessions opened per second.		
Cached charts requested	Indicates the number of charts per second that were provided from a cached image.	Charts/Sec	A high value is generally desired for this measure, as it indicates the existence of a well-tuned cache. Such a cache goes a long way in reducing processing overheads.
Active sessions	Indicates the number of currently active sessions on Excel Calculation Services.	Number	This value is a good indicator of the current workload on the service.
Average processing time for a request	Indicates the average processing time for a request on Excel Calculation Services.	Secs	A high value for this measure or a gradual increase in this value could be indicative of a processing bottleneck on the service.
Average session time	Indicates the average session time.	Secs	
Current size of memory cache	Indicates the current size of unused items of the excel calculation service manager in bytes.	MB	
Excel calculation service workbook cache size	Indicates the current size of the Excel Calculation Services workbook cache.	MB	A high value for this measure indicates that the cache is adequately sized. A poorly-sized cache can adversely impact service performance, especially when multiple users try to access the same set of workbooks.
Rendered charts requested	Indicates the number of chart requests per second.	Charts/Sec	
Requests received	Indicates the number of	Received/Sec	

Measurement	Description	Measurement Unit	Interpretation
	requests received per second on Excel Calculation Services.		
Active requests	Indicates the number of requests being actively processed on Excel Calculation Services.	Number	

3.1.4 Excel Services Web Front End Test

The core components of Excel Services - the Excel Web Access, Excel Services, and Excel Calculation Services components - can be divided into components on the Web front-end server and those that live on a back-end application server. The Web front end includes Excel Web Access and Excel Web Services.

Excel Web Services is the Excel Services component that provides programmatic access to its Web service. You can develop applications that call Excel Web Services to calculate, set, and extract values from workbooks, as well as refresh external data connections. Using Excel Web Services, you can incorporate server-side workbook logic into an application, automate the updating of Excel workbooks and create application-specific user interfaces around server-side Excel calculation.

Using the **Excel Services Web Front End** test, you can track the number and rate of requests to the Excel Web Services component.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active requests	Indicates the current number of requests to the Excel Web Services component.	Number	
Requests rate	Indicates the rate at which requests were received by the Excel Web Services component.	Requests/Sec	

3.1.5 Excel Web Access Test

Excel Web Access is an Excel Services Web Part in Office SharePoint Server 2007 that renders (in other words, creates the HTML for) live Excel workbooks on a Web page, and allows the user to interact with those workbooks and explore them. Excel Web Access is the visible Excel Services component for the user.

This test measures the responsiveness of the Excel Web Access component to user requests.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Average chart image request time	Indicates the average time taken between the request for a chart image and the issuance of the response to the web browser by Excel Web Access.	Secs	An unusually high value for this measure is a cause for concern, as it indicates a slowdown in the responsiveness of the Excel Web Access component.
Chart image request	Indicates the Indicates the number of requests for chart images that are served by Excel Web Access per second.	Requests/Sec	
Excel web access average request time	Indicates the excel web access average request time.	Secs	

3.1.6 Office Server Search Indexer Catalogs Test

The MOSS 2007 Search feature is implemented using two MOSS services:

- Indexing: Responsible for crawling content sources and building index files.
- Searching: Responsible for finding all information matching the search query by searching the index files.

All searching is performed against the index files; if these files do not contain what the user is looking for, there will not be a match. So, the index files are critical to the success of the search feature of MOSS. The search functionality can be described in its simplest form as a Web page where the user defines his or her search query. The index service works together with the searching service to let you search Office SharePoint Server content.

This test monitors the search queries to every content index on the SharePoint server, promptly reports query failures, and thus reveals the overall efficiency of the Search feature offered by MOSS 2007.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Failed queries	Indicates the number of queries to the content index that currently failed.	Number	Ideally, this value should be 0.
Succeeded queries	Indicates the number of queries to the content index that succeeded.	Number	A high number of successful queries serves as a good indicator of the efficiency of the index and query services provided by SharePoint.
Queries	Indicates the number of queries currently executing on the content index.	Number	
Documents filtered	Indicates the number of documents currently filtered in the content index.	Number	
Index size	Indicates the current size of the content index.	Number	

3.1.7 Office Server Search Gatherer Test

The MOSS 2007 Search feature is implemented using two MOSS services:

- Indexing: Responsible for crawling content sources and building index files.
- Searching: Responsible for finding all information matching the search query by searching the index files.

All searching is performed against the index files; if these files do not contain what the user is looking for, there will not be a match. So, the index files are critical to the success of the search feature of MOSS. The search functionality can be described in its simplest form as a Web page where the user defines his or her search query.

The index role can be configured to run on its own MOSS server, or run together with all the other roles, such as the Web service, Excel Services and Forms Services. It performs its indexing tasks following this general e:

a. SharePoint stores all configuration settings for the indexing in its database.
b. When activated, the index will look in SharePoint's databases to see what content sources to index, and what type of indexing to perform, such as a full or incremental indexing.
c. The index service will start a program called the **Gatherer**, which is a program that will try to open the content that should be indexed.
d. For each information type, the **Gatherer** will need an Index Filter, or **IFilter**, that knows how to read text inside this particular type of information. For example, to read a MS Word file, an IFilter for .DOC is needed.
e. The Gatherer will receive a stream of Unicode characters from the IFilter. It will now use a small program called a Word Breaker; its job is to convert the stream of Unicode characters into words.
f. However, some words are not interesting to store in the index, such as "the", "a", and numbers; the Gatherer will now compare each word found against a list of Noise Words. This is a text file that contains all words that will be removed from the stream of words.
g. The remaining words are stored in an index file, together with a link to the source. If that word already exists, only the source will be added, so one word can point to multiple sources.
h. If the source was information stored in SharePoint, or a file in the file system, the index will also store the security settings for this source. This will prevent a user from getting search results that he or she is not allowed to open.

i. Since the success of an indexing operation also depends upon how the **Gatherer** program functions, administrators need to keep their eyes open for irregularities in the functioning of the gatherer, so that such anomalies are detected instantly, and corrected before they can stall the indexing process.

This test monitors the gatherer, and reports issues in its performance (if any).

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Documents filtered	Indicates the number of documents filtered per second.	Documents/Sec	If this rate is decreasing over time, you should perform some troubleshooting to find out why your server is not filtering documents. Look for memory issues, processor issues, network issues, or site hit frequency rules that slow the gatherer process.
Filtering threads	Indicates the current number of filtering threads in the system.	Number	
Threads accessing the network	Indicates the number of threads currently	Number	These threads have sent or are

Measurement	Description	Measurement Unit	Interpretation
	waiting for a response from the filter process.		sending their request off to the remote data store and are either waiting for a response or consuming the response and filtering it. You can distinguish the difference between actually waiting on the network versus filtering the document by looking at a combination of CPU usage and Network usage counters. If this number is consistently high then you are either network bound or you are bound by a "hungry" host. If you are not meeting your crawl freshness goals, you can either change your crawl schedules to minimize overlapping crawls or look the remote repositories you are crawling to optimize them for more throughput.
Active queue length	Indicates the number of documents currently waiting for robot threads.	Number	If the value of this measure is not 0, then all threads should be filtered.
Admin clients	Indicates the number of currently connected administrative clients.	Number	
Reason to back off	A code describing why the gatherer service went into back-off state.	Number	The values that this measure can take and the states they denote are available below: 0 - Up and Running. 1 - High system IO traffic.

Measurement	Description	Measurement Unit	Interpretation
			2 - High notifications rate. 3 - Delayed recovery in progress. 4 - Due to user activity. 5 - Battery low. 6 - Memory low. 99 - Some internal reason. During a back-off period, indexing is suspended. To manually back off the gatherer service, pause the search service. If the search service itself generates the back-off, an event will be recorded and the search service will be paused automatically. There is no automatic restart, so you must manually start the search service in order to end a back-off state. Note that there is little reason to start the search service until you have solved the problem that caused the back-off in the first place.
Threads waiting for plug-ins	Indicates the number of threads currently waiting for plug-ins to complete an operation	Number	These threads have the filtered documents and are processing it in one of several plug-ins. This is when the index and property store are created. If you have a consistently high number for this counter, check the metrics reported by the **Office Server Search Archival Plugin** test for problem pointers.
Delayed	Indicates the number of	Number	If you have a plethora of rules and

Measurement	Description	Measurement Unit	Interpretation
documents	documents that were currently delayed due to site hit frequency rules.		this number is steadily increasing over time, consider relaxing or simplifying your site hit frequency rules. A very high number may indicate a conflict in the rules that the gatherer cannot resolve or follow with efficiency.
Idle threads	Indicates the number of threads that are currently waiting for documents.	Number	These threads are not currently doing any work and will eventually be terminated. If you consistently have a more than Max Threads/Hosts idle threads you can schedule an additional crawl. If this number is 0 then you are starved. Do not schedule another crawl in this time period and analyze the durations of your crawls during this time to see if they are meeting your freshness goals. If your goals are not being met you should reduce the number of crawls.
Hearbeats	Indicates the number of heartbeats per second.	Hearbeats/Sec	A heartbeat occurs once every 10 seconds while the service is running. If the service is not running there will be no heartbeat.

3.1.8 SharePoint Publishing Cache Test

Object caching Office SharePoint Server 2007 supports caching of certain page items, such as navigation data and data accessed through cross-list queries. Caching page items reduces the requirement to retrieve field data from the database every time a page is rendered. The caching system also caches complete field data for a page, excluding data for any Web Part controls on the page.

Using the statistics provided by this test, you can fine-tune your cache size, so as to maximize cache hits and minimize object discards.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Publishing cache hit ratio	Indicates the ratio of hits to misses on the publishing cache.	Percent	A hit ratio greater than 90% and a low object discard rate are generally good signs that the current size is satisfactory. However, you should also measure user response time for key operations to adjust this setting. If you set the size too large, you might waste valuable memory for the other caches, such as the ASP.NET output cache if it is used. Certain Web Parts, such as the Content Query Web Part, stores their XSLT stylesheets in the output cache. If the object cache size is set too large, ASP.NET might flush output cache memory

Measurement	Description	Measurement Unit	Interpretation
			to make room for it. CPU usage might increase after the flushing. This is especially important for a system that is running on a 32-bit operating system because each worker process is limited to 2 GB application memory space. If you set the object cache size limit too large, the IIS worker process (w3wp) can run out of memory.
Object discards	Indicates the total number of items that have been removed from the publishing cache since the last measurement period due to cache compaction.	Number	

3.1.9 Office Server Search Schema Plugin Test

The Search feature of the MOSS 2007 not only makes it possible to search through content, documents, and people within the SharePoint sites, but also through external sources such as Windows file shares, public Microsoft Exchange server folders, and standard web sites. This is what makes MOSS 2007 that much more valuable to users.

The **Archival** and **Schema** plugins are internal components of the MOSS Search engine, typically responsible for processing the metadata of indexed documents. By monitoring these components, administrators can efficiently evaluate how well the MOSS search feature is functioning, identify irregularities early, and fine-tune the MOSS server to ensure peak performance of the search engine.

The **Office Server Search Schema Plugin** test focuses on the schema plugin component, and helps assess its processing ability.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.

Parameters	Description
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Aliases mapped	Indicates the total number of aliases which have been currently mapped to the schema.	Number	
Duplicate aliases	Indicates the number of aliases that the schema currently ignored as they are duplicates.	Number	
Refresh count	Indicates the number of aliases that have been refreshed from the database, currently.	Number	
Error documents	Indicates the number of documents that have currently returned errors from the plug-in.	Number	Ideally, this value should be 0.

3.1.10 Office Server Search Gatherer Projects Test

As already mentioned, the indexing service will start a program called the **Gatherer**, which is a program that will try to open the content that should be indexed. Using an **iFilter**, the Gatherer reads the content as Unicode characters, converts the characters into words, identifies words that are worth indexing, and stores them in the content indexes.

For each content index, this test reports critical performance statistics revealing the content processing ability of the gatherer.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each content index on the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Documents added	Indicates the number of document additions per second.	Documents/Sec	
Error	Indicates the number of filtered documents which returned an error per second.	Documents/Sec	A low value is typically desired for this measure.
Retries	Indicates the total number of times that access to a document has been retried.	Number	A high value of this measure indicates that the gatherer is attempting to access a document numerous times, without success. You should check the gatherer logs and identify the problem document. Then ensure that it has the correct extension and that you have the correct iFilter for it.
Incremental crawls	Indicates the number of incremental crawls currently in progress.	Number	
Waiting documents	Indicates the current queue size of unprocessed	Number	A high value of this measure could indicate a processing bottleneck on the gatherer.

Measurement	Description	Measurement Unit	Interpretation
	documents in the gatherer.		If this measure returns the value 0 on the other hand, it could indicate that the gatherer is idle.

4

Chapter 4: Pre-requisites for Monitoring SharePoint 2010/2013

To pull the desired metrics from a SharePoint 2010 server/farm, the eG tests need to be configured with the credentials of a user with the following privileges:

- The user should be part of the SharePoint Farm Administrators group;
- The user should have shell admin access to all databases in SharePoint
- The user should be part of the following groups on the eG agent host:
  - Administrators
  - WSS_ADMIN_WPG
  - IIS_USRS
  - Performance Monitor Users
  - WSS_WPG
  - Users
- The user should have full control access to each web application that needs to be monitored on the SharePoint server;
- The user should have read and execute access to the eG agent install directory.

The sections that follow describe how to grant each one of the aforesaid privileges to a user.

4.1 Adding a User to a Farm Administrators Group

Follow the steps below to add a user to the SharePoint Farm Administrators group:

1. Login to the SharePoint server to be monitored.
2. Click **Start** , point to **Administrative Tools** , and then click **SharePoint Central Administration**, to open the SharePoint Central Administration console.
3. From the **Central Administration** panel in the console, select **Security**. Then, pick **Manage the farm administrators group** from the **Security** section (see Figure 4.1).

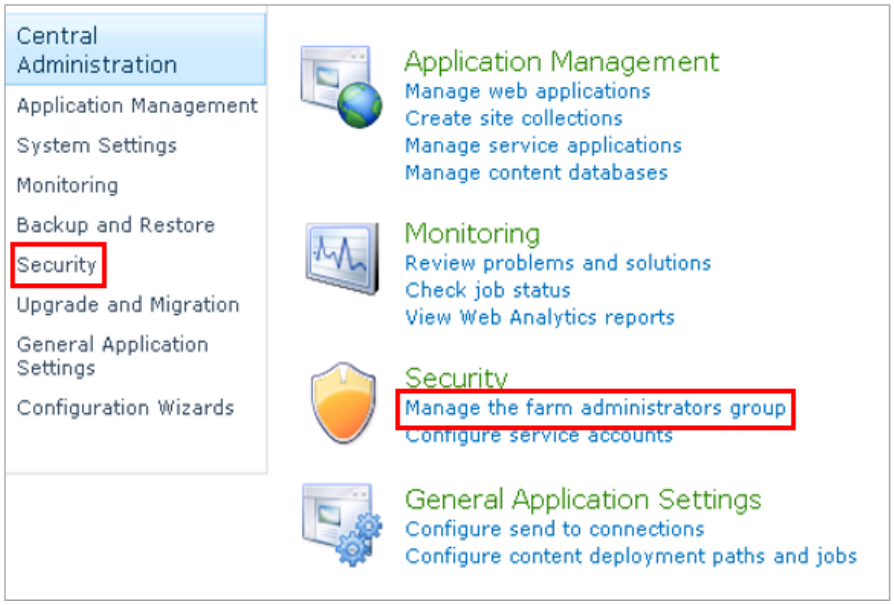


Figure 4.1: Selecting the Manage farm administrators group option from the Security section

4. When Figure 4.2 appears, click on the **Farm Administrators** option in the left panel. This will list the users who are part of that group in the right panel. Next, click the **New** button therein to add another user to the farm administrators group.

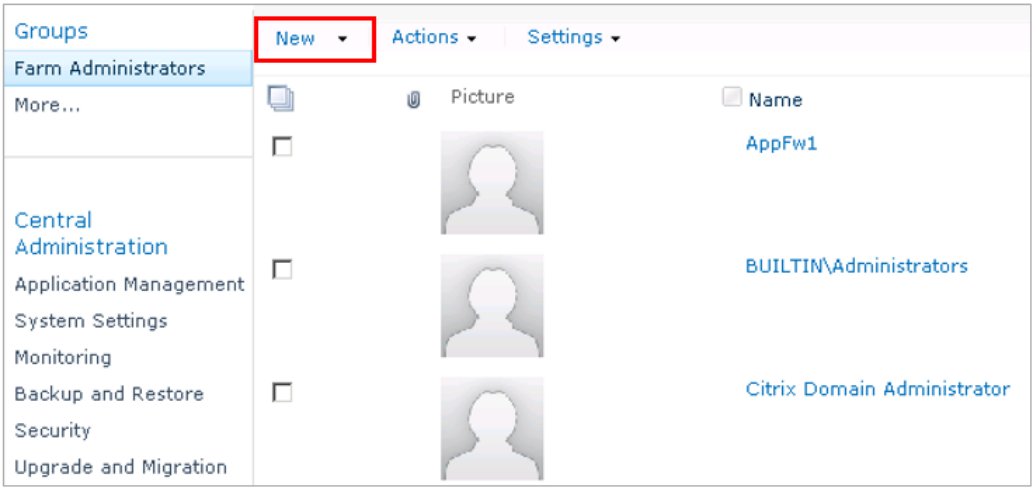


Figure 4.2: Clicking the New button

5. This will open Figure 4.3, where you have to specify the name of the user who is to be added to the farm administrators group.

Figure 4.3: Adding a user to the farm administrators group

6. Finally, click the **OK** button in Figure 4.3 to register the changes.

4.2 Granting a User Shell Admin Access to All SharePoint Databases

To achieve this, do the following:

1. Login to the SharePoint server to be monitored.
2. Open the **SharePoint 2010 Management Shell** as **administrator**.

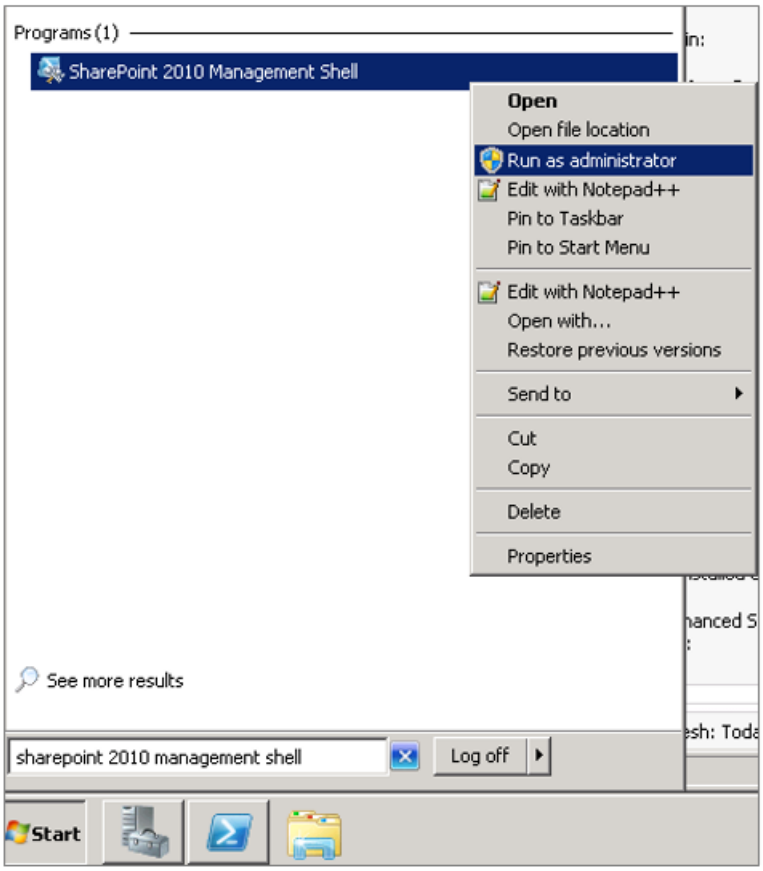


Figure 4.4: Opening the SharePoint Management Shell

3. From the management shell, run the following commands one after another:

```
Add-PSSnapin Microsoft.SharePoint.PowerShell
```

```
Get-SPDatabase | Add-SPShellAdmin <domainname>\<username>
```

For instance, to grant shell admin access to user ctxuser in domain citrix, the commands will be:

```
Add-PSSnapin Microsoft.SharePoint.PowerShell
```

```
Get-SPDatabase | Add-SPShellAdmin citrix\ctxuser
```

4.3 Adding a User to Local Groups on the eG Agent Host

As mentioned already, the eG tests should be configured with the credentials of a user who belongs to the following groups on the eG agent host:

- Administrators
- WSS_ADMIN_WPG

- IIS_USRS
- Performance Monitor Users
- WSS_WPG
- Users

To add a user to these groups, do the following:

1. Login to the system hosting the eG agent that is monitoring the SharePoint server.
2. Click **Start** and right-click on the **Computer** option. Pick the **Manage** option from the shortcut menu that appears.

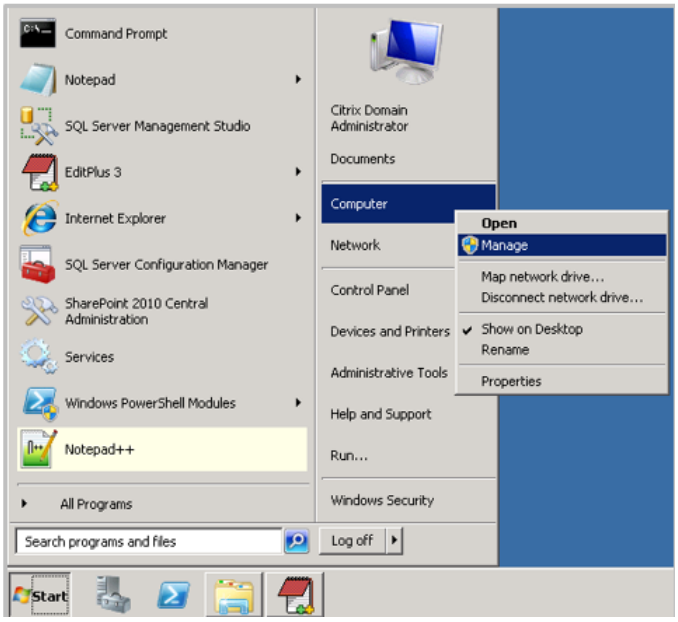


Figure 4.5: Managing the Computer hosting the eG agent

3. Figure 4.6 will then appear. Expand the **Configuration** node in the left panel of ignore, expand its **Local Users and Groups** sub-node, and click the **Groups** node within. The right panel will then display all the groups configured on the eG agent host.

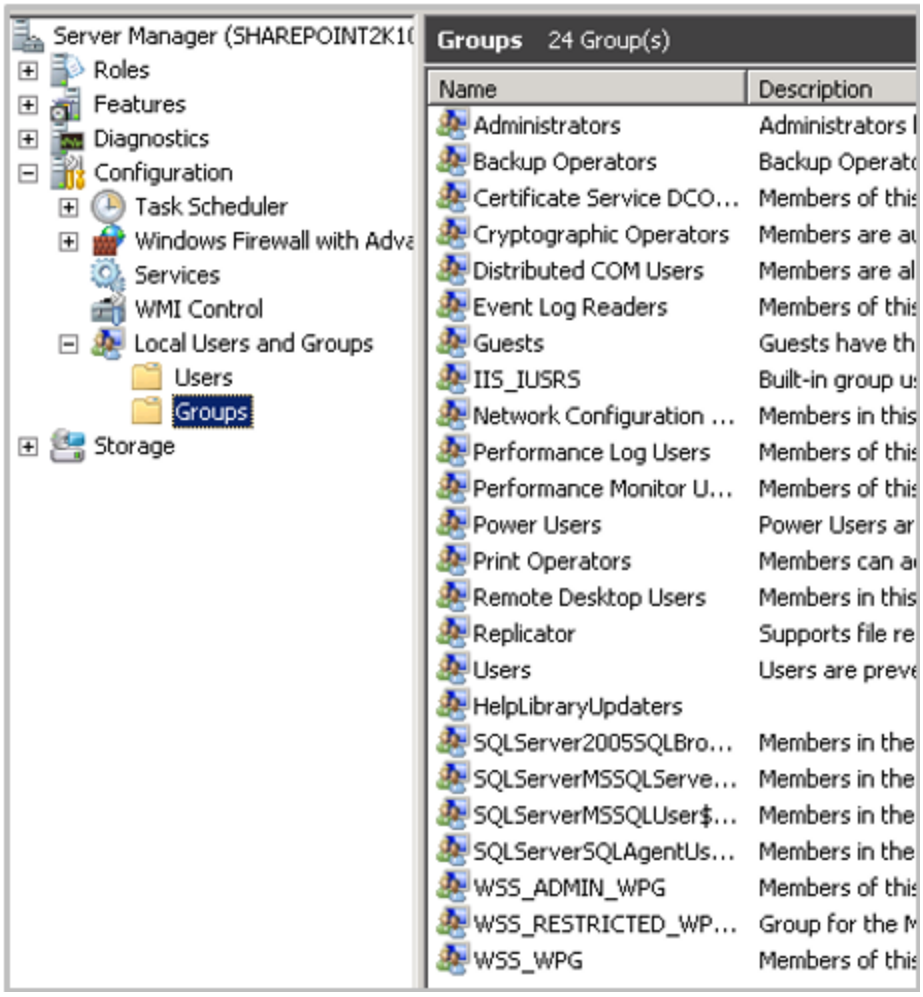


Figure 4.6: Viewing the groups configured on the eG agent host

4. Browse the list of local groups to locate any of the groups listed above.
5. Once the required group is found, click on that group in the right panel. Figure 4.7 will then appear listing the users in that group. To add a user to that group, click the **Add** button in Figure 4.7.

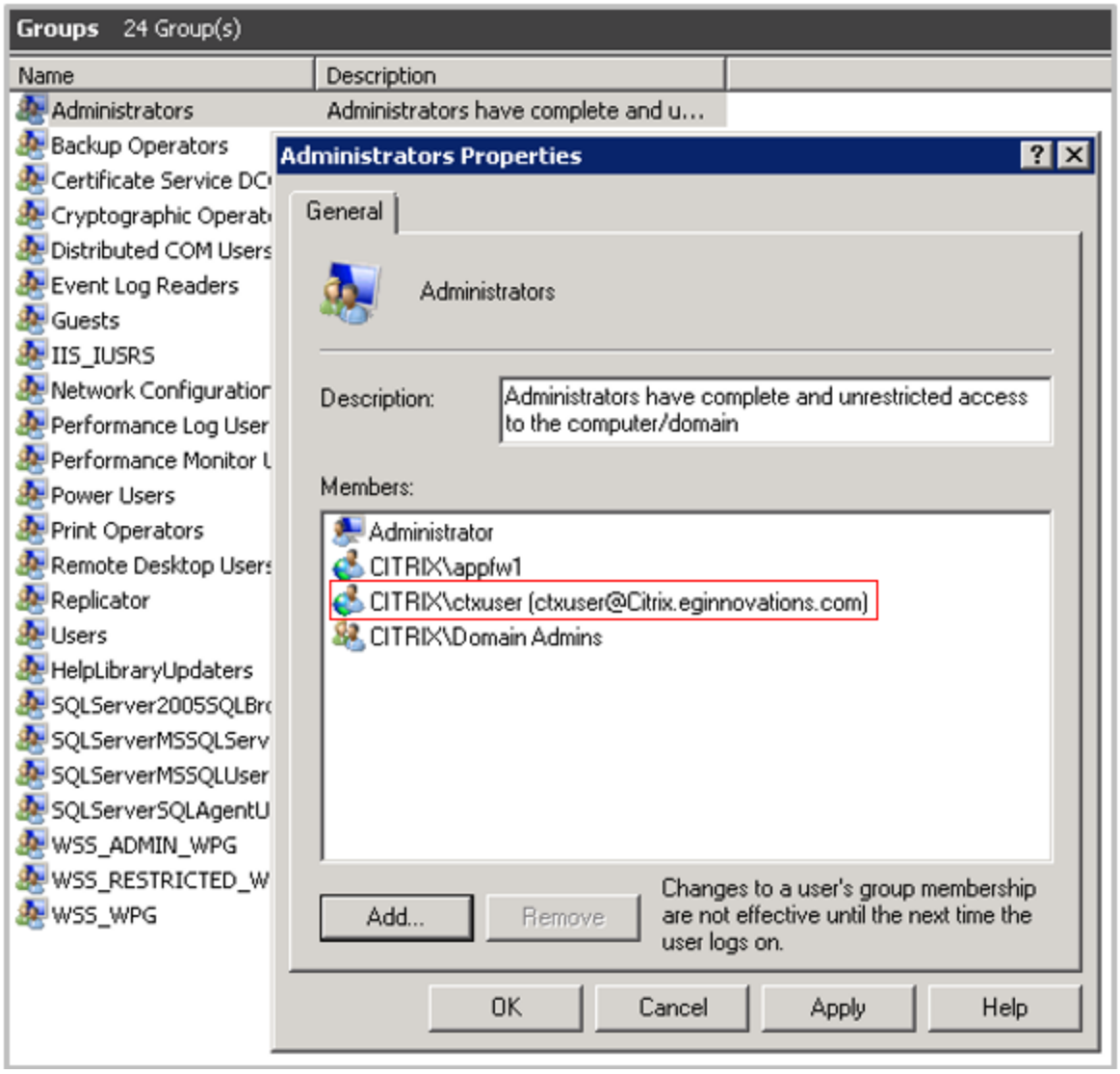


Figure 4.7: Adding a user to the local group on the eG agent host

6. After adding the user, click the **Apply** and **OK** buttons in Figure 4.7 to save the changes.
7. Repeat steps 4-6 to add that user to each of the groups listed above.

4.4 Granting a User Full Control Access to Web Applications on SharePoint

To achieve this, do the following:

1. Login to the SharePoint server to be monitored.
2. Click **Start** , point to **Administrative Tools** , and then click **SharePoint Central Administration**, to open the SharePoint Central Administration console.
3. Click **Central Administration** in the left panel of the console. From the **Application Management** section in the right panel, select **Manage web applications**.

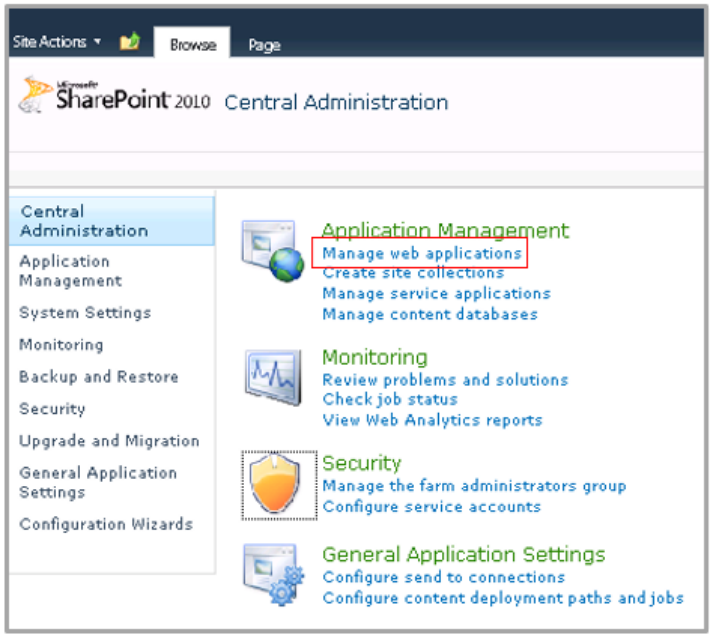


Figure 4.8: Select the Manage web applications option

4. The list of web applications deployed will appear. Select an application from the list and click the **User Policy** tool indicated by Figure 4.9.

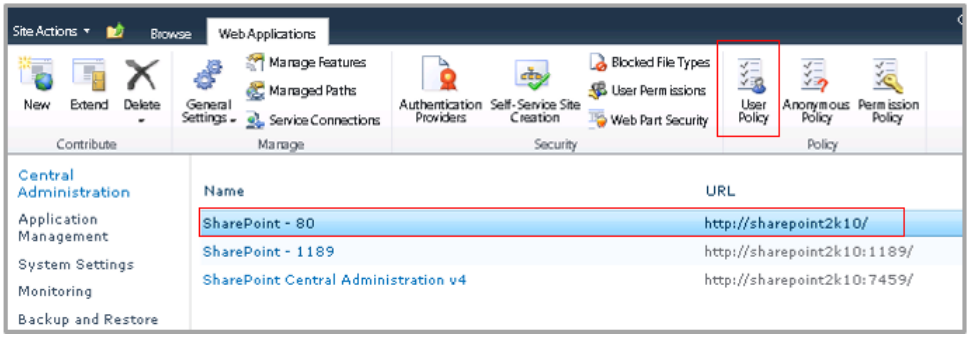


Figure 4.9: Clicking the User Policy tool for a web application

5. The list of users who are allowed access to that web application will then appear (see Figure 4.10). To grant another user access to the chosen application, click **Add New** in Figure 4.10.

Figure 4.10: List of users who are allowed access to the chosen web application

6. In the **Users** text area of Figure 4.11, enter the name of the user who is to be allowed access to the chosen application. Then, select the **Full Control** check box in the **Permissions** section and click the **Finish** button.

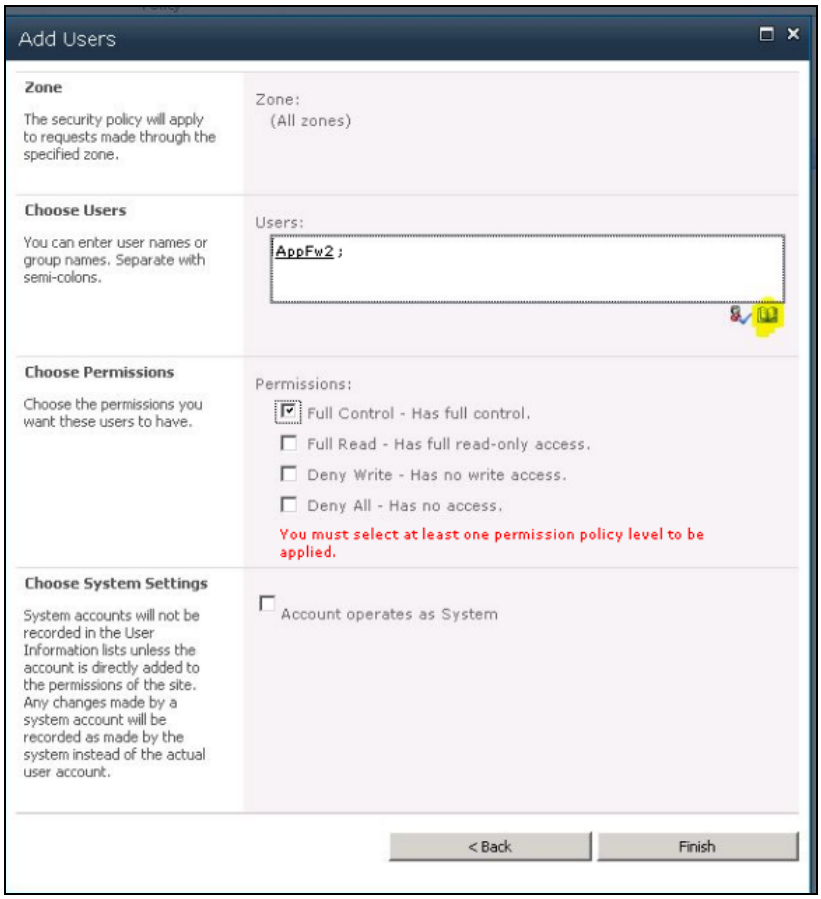


Figure 4.11: Adding a user to the web application and granting Full Control permissions to the user

7. Repeat steps 4-6 for each web application that you want monitored in Figure 4.8.

4.5 Granting a User Read and Execute Permissions to the eG Agent Install Directory

For this, follow the steps below:

1. Login to the eG agent host.
2. Open Windows Explorer and locate the **eGurkha** folder on the host using it.
3. Right-click on the folder and select **Properties** from the shortcut menu.
4. Figure 4.12 will then appear. Click on the **Security** tab page in Figure 4.12. Click the **Edit** button below the **Group or user names** list box in Figure 4.12.

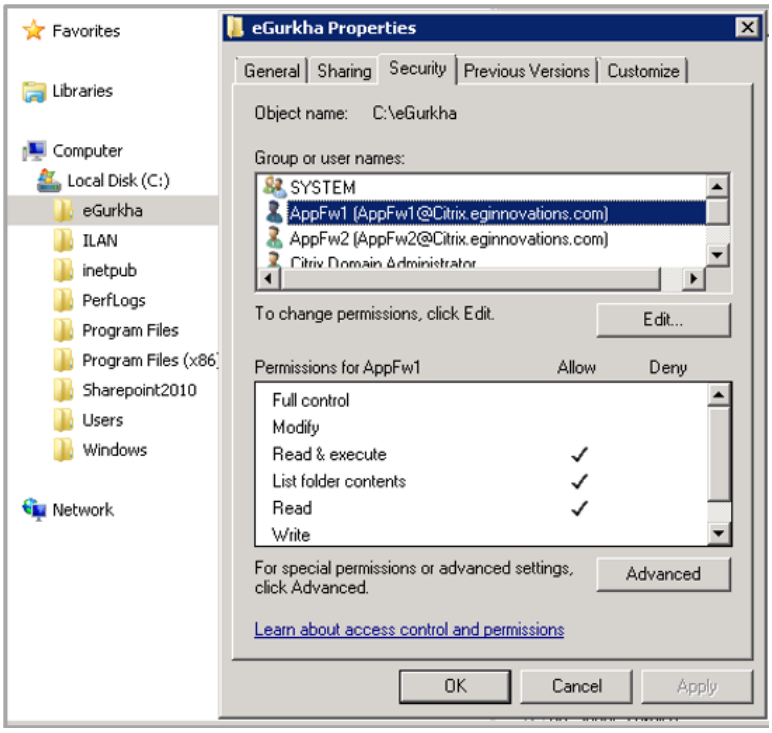


Figure 4.12: Editing the permissions of a user

5. Figure 4.13 will then appear. From the **Groups or user names** list in Figure 4.13, select the user who has to be granted access. Then, select the **Allow** check box corresponding to **Read & Execute** in the **Permissions** section.

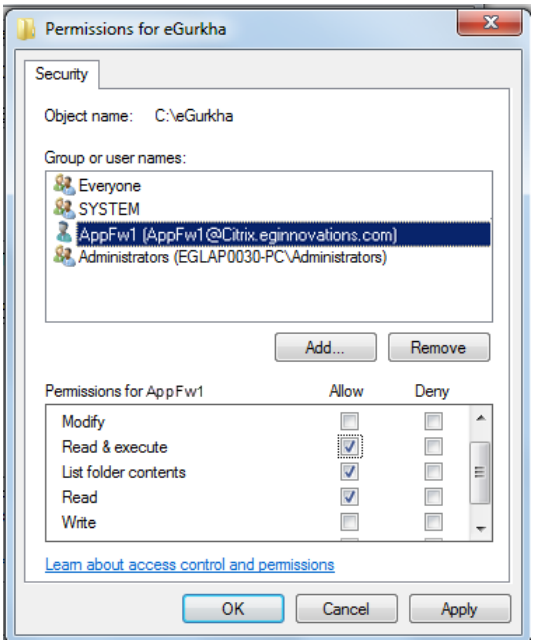


Figure 4.13: Granting the user Read & Execute permissions to the eGurkha folder

6. Finally, click the **Apply** and **OK** buttons in Figure 4.13.

5

Chapter 5: Administering eG Manager to monitor Microsoft SharePoint 2010/2013 Server

1. Log into the eG administrative interface.
2. eG Enterprise cannot automatically discover Microsoft SharePoint 2010/2013 server. You need to manually add the server using the **COMPONENTS** page (see Figure 5.1) that appears when the Infrastructure -> Components -> Add/Modify menu sequence is followed. Remember that components manually added are managed automatically.

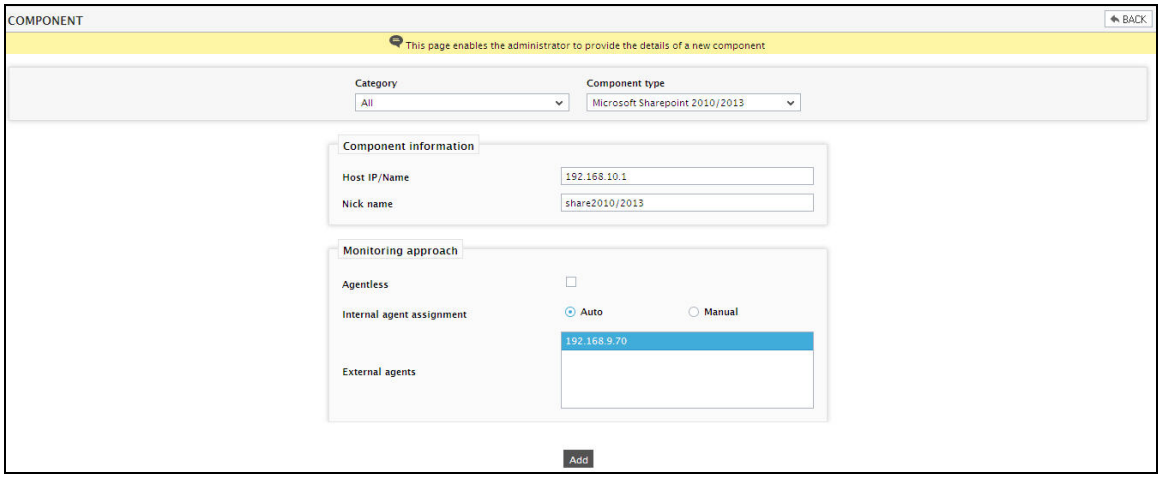


Figure 5.1: Adding the Microsoft SharePoint 2010 server

3. Next, signout of the eG administrative interface.

6

Chapter 6: Monitoring SharePoint 2010/2013

Figure 6.1 depicts the Microsoft SharePoint 2010/2013 monitoring model.

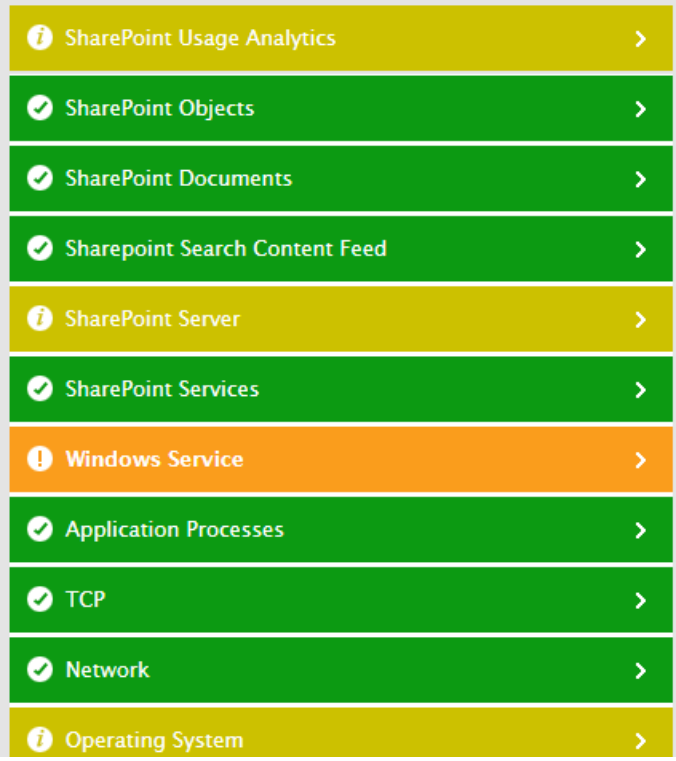


Figure 6.1: The layer model of Microsoft SharePoint 2010/2013

Each layer of Figure 6.1 is mapped to a variety of tests that periodically check the health of the core components and services of the SharePoint 2010/2013 server. Using the metrics reported by these tests, administrators can find quick and accurate answers for the following performance queries:

- Has the archival plugin marked too many documents for retry?
- Are too many documents in the archival plugin waiting for a queue?
- Have any errors occurred in index propagation?
- Is index reception error-free?
- Did any search query fail?
- Is query execution taking too long? If so, where is the query spending maximum time?

- Is the query CPU-intensive? If so, where is the query spending the maximum CPU time?
- Is any SharePoint Foundation process overloaded? If so, which one is it?
- Is any SharePoint Foundation process taking too long to execute requests? Which process is it?
- Which process is taking too much time to execute queries?
- Is the schema plugin able to process documents and properties quickly?
- Are there too many idle threads on the SharePoint server?
- Is any thread waiting for a network response from the filter process?
- Have too many servers timed out?
- Was any slowdown noticed in document filtering? Is it due to site hit frequency rules? If so, how many documents were affected as a result?
- Is filtering failing for any document?

In order to enable the eG agent to collect these metrics from a SharePoint 2010 server, the pre-requisites outlined in **Pre-requisites for Monitoring SharePoint 2010/2013** chapter will have to be fulfilled.

6.1 The SharePoint Services Layer

The tests mapped to this layer shed light on the current status, overall health, and efficiency of the critical services offered by SharePoint Foundation. This includes the Search archival and schema plugins, the search indexing mechanism, the search gatherer, and the critical SharePoint Foundation processes.

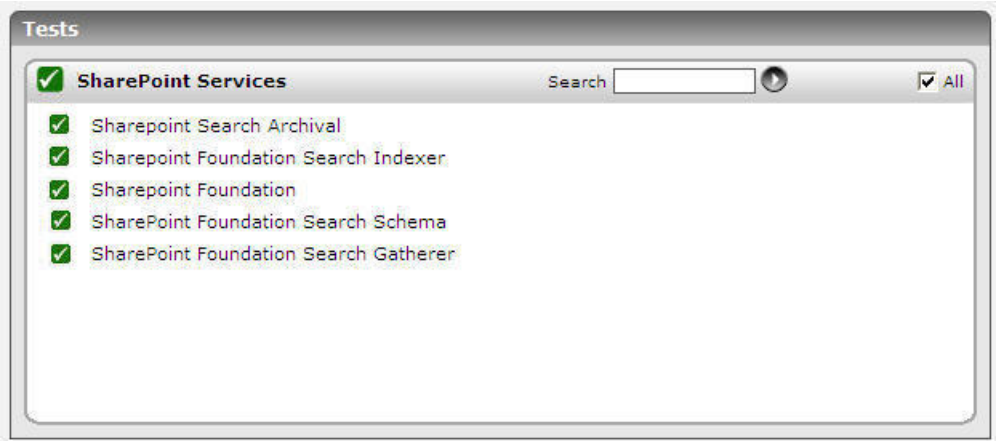


Figure 6.2: The tests mapped to the SharePoint Services layer

6.1.1 SharePoint Search Archival Test

The Search feature of the Microsoft SharePoint server not only makes it possible to search through content, documents, and people within the SharePoint sites, but also through external sources such as Windows file shares, public Microsoft Exchange server folders, and standard web sites.

The **Archival** and **Schema** plugins are internal components of the Microsoft SharePoint server Search engine, typically responsible for processing the metadata of indexed documents. By monitoring these components, administrators can efficiently evaluate how well the Microsoft SharePoint server search feature is functioning, identify irregularities early, and fine-tune the Microsoft SharePoint server to ensure peak performance of the search engine.

This test monitors the performance of the SharePoint Foundation Search Archival Plugin.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results each for the Microsoft SharePoint Server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Upload queues available to filtering threads	Indicates the number of upload queues that are available to filtering threads in this plugin.	Number	
Queues committing changes and	Indicates the number of queues that are	Number	

Measurement	Description	Measurement Unit	Interpretation
completing uploads	exclusively allotted for committing the changes and completing the uploads.		
Queues waiting to flush data to the property store	Indicates the number of queues that are waiting to flush data to the property store.	Number	A property store is a table of properties and their values that are used and maintained by the Search service. Each row in the table corresponds to a document in the full-text index.
Queues being used by filtering threads	Indicates the number of queues that are being used by the filter threads in this plugin.	Number	
Bulk insert sessions to the database server	Indicates the number of active bulk insert sessions to the database server.	Number	
Documents processed	Indicates the number of documents that are processed in this plugin during the last measurement period.	Number	A high value is desired for this measure. If the value decreases steadily over a period of time, it indicates a performance bottleneck.
Documents marked for retry by archival plugin	Indicates the number of documents that were marked for retry from this plugin during the last measurement period.	Number	Ideally the value of this measure should be low. A higher value may indicate a performance bottleneck.
Documents waiting for a queue	Indicates the number of documents that were waiting for a queue during the last measurement period.	Number	Ideally the value of this measure should be low. A higher value may indicate a performance bottleneck.

6.1.2 SharePoint Foundation Search Indexer Test

Using the Search feature of SharePoint 2010, users can easily find the information they need in SharePoint Foundation Sites.

The key components of SharePoint's Search architecture are as follows:

- **Indexer**: Also referred to as the **Crawl Component** or the **Crawler**, the **Indexer** is solely responsible for building indexes. The indexers enumerate the source content and pass text information to the relevant index partition on the query server. The indexer also indexes any metadata to the search property database and updates the crawl status in the crawl database.
- **Crawl Database**: The **Crawl Database** tracks what needs to be crawled and what has been crawled.
- **Query Component**: Commonly referred to as the **Query Server**, this component will perform a search against an index created by the indexer. The query component will apply such things as security trimming, best bets, relevancy, removes duplicates, etc.
- **Index partition**: Indexes can be split into multiple partitions called **index partitions** to improve the amount of time it takes to perform a search by the query component. For every query component there will be a single index partition that is queried by the query component.
- **Index Partition Mirror:** Mirrors can be created for the index partitions. These mirrors again provide the ability to provide redundancy and better search result performance.
- **Property Database**: This database stores metadata and security information items in the index. The property database will be associated with one or more query components and is used as part of the query process. These properties will be populated as part of the crawling process which creates the index.
- **Search Admin Database**: The **Search Administration Database** is mostly responsible for managing information associated to the configuration and topology of the SharePoint Search service. There will only be one instance of this database for each Search Application Service instance.

Figure 6.3 depicts how these components work together to implement the search feature of SharePoint 2010.

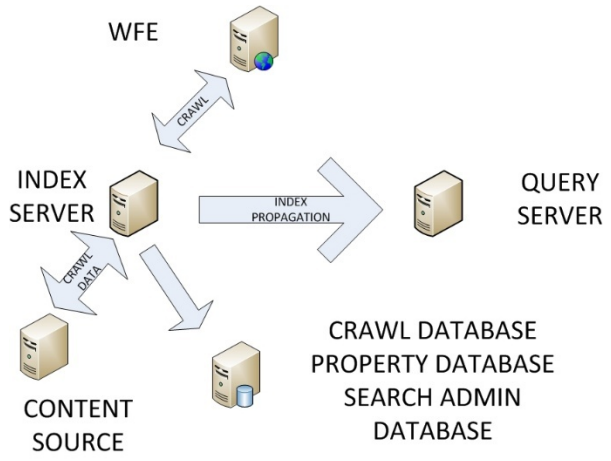


Figure 6.3: How Search works in SharePoint 2010?

When a user enters a search query on a Web Front End (WFE) server, the query server processes the query. While processing, the query server retrieves the information that fulfills the query criteria from the index partition stored on its local file system, and also retrieves metadata information from the search property database. The index partition on the other hand, receives text information from the indexers that enumerate the source content. Once the desired query results are available, the query server packages the results, and delivers the results back to the requesting WFE server.

The success of SharePoint Search feature therefore depends upon how quickly the query server processes the queries it receives, and how effective the index files built by the indexer are.

This test monitors the search queries to the SharePoint server, promptly reports query failures, and thus reveals the overall efficiency of the Search feature offered by Microsoft SharePoint Server.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the SharePoint server being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active connections to the indexer plugin	Indicates the number of currently active connections to this indexer plugin.	Number	
Index size	Indicates the current size of the content index that is being managed by this indexer plugin.	Number	
Tasks in queue of propagation task sender	Indicates the number of tasks that were in queue of the propogation task sender.	Number	
Tasks in queue of index receiver	Indicates the number of tasks that were in queue of the index receiver.	Number	
Tasks in queue of index propagator	Indicates the number of tasks that were in queue of the index propogator.	Number	
Errors in Index propagation	Indicates the number of errors in index propagation during the last measurement period.	Number	Once the indexer builds the indexes, it propagates/pushes the index files from the index server to the query server. The indexer then waits for the query server to absorb the index, after which it acknowledges that the documents are successfully crawled. Ideally, no errors should occur in this process - i.e., the value of this measure should be ideally 0. The incidence of one or more errors can adversely impact the user experience with SharePoint's

Measurement	Description	Measurement Unit	Interpretation
			Search mechanism.
Errors in Index reception	Indicates the number of errors in index reception during the last measurement period.	Number	Ideally, no errors should occur in this process - i.e., the value of this measure should be ideally 0.
Indexes received successfully	Indicates the number of indexes that were received successfully by this indexer plugin during the last measurement period.	Number	A high value is desired for this measure. A sudden/gradual decrease in the value of this measure may indicate a performance bottleneck in the Microsoft Server Search Indexer plugin.
Indexes propagated successfully	Indicates the number of indexes that were propagated successfully by this indexer plugin during the last measurement period.	Number	A high value is desired for this measure. A sudden/gradual decrease in the value of this measure may indicate a performance bottleneck in the Microsoft Server Search Indexer plugin.
Documents filtered	Indicates the number of documents that were filtered by this indexer plugin during the last measurement period.	Number	
Documents in indexes that are being propagated	Indicates the number of documents in indexes which were being propagated by this indexer plugin during the last measurement period.	Number	
Queries handled	Indicates the number of queries that were handled on the content	Number	

Measurement	Description	Measurement Unit	Interpretation
	index during the last measurement period.		
Successful queries	Indicates the number of queries that were processed successfully during the last measurement period.	Number	A high value is desired for this measure.
Failed Queries	Indicates the number of queries that failed to process during the last measurement period.	Number	Ideally, the value of this measure should be zero.
Avg latency of queries in the last minute	Indicates the average latency with which the queries were processed in the last minute.	Secs	Ideally, when an end user executes a query, results should be returned in less than one second. If this is not the case routinely, then end user experience with the Search feature is bound to suffer. The common reasons for poor query performance and their recommended solutions are as follows: • One or more index partitions contain more than 10 million documents: Add an additional index partition, and if possible, an additional index partition mirror. If all query servers already contain an active and a mirrored index partition, add more query servers. • One or more query servers are memory bound and/or paging virtual memory on disk: Add additional

Measurement	Description	Measurement Unit	Interpretation
			memory to the query server. Ensure that the query server has enough RAM to store 33% of each index partition (present on the query server) in memory. • Query preformance suffers during the first few queries after the server is rebooted or during crawl processing and index propagation: Ensure that the physical disk where the index partition is stored is capable of providing 2,000 IOPS for each index partition. • Query latency is high though all query servers are adequately sized: Ensure that the property database server has enough RAM available to store 33% of the property store tables in memory. Make sure that the property database server is not CPU or disk I/O bound. Additional property database servers or property databases can also be added based on need.
Execution time to create a query restriction	Indicates the average execution time to create a query restriction.	Secs	Whenever query latency is very high - i.e., if the Avg latency of queries in the last minute measure reports a very high value - then, you can compare the values of these measures to understand where the query is spending too much time.

Measurement	Description	Measurement Unit	Interpretation
Execution time to resolve query	Indicates the average execution time to resolve a query.	Secs	You can thus identify the bottleneck areas and accordingly decide on the action to be taken to improve query performance.
Execution time to get row results of a query	Indicates the average execution time to get row results of a query.	Secs	
Execution time spent in other parts of a query	Indicates the average time taken to create a query restriction.	Secs	
CPU time to create a query restriction	Indicates the average CPU time that is required to create a query restriction.	Secs	If a query is found to be CPU-intensive, you can compare the values of these measures to determine where the query is consuming CPU excessively.
CPU time to resolve a query	Indicates the average CPU time taken to resolve a query.	Secs	
CPU time to get row results for a query	Indicates the average CPU time taken to get row results of a query.	Secs	
CPU time spent in other parts of a query	Indicates the average CPU time taken to execute other parts of the query.	Secs	

6.1.3 SharePoint Foundation Test

Microsoft SharePoint Foundation is the essential solution for organizations that need a secure, manageable, web-based collaboration platform. It serves as the basis for SharePoint server and offers out of the box elements such as blogs, wikis, team workspaces, and document libraries, providing users with the ideal way to share information and collaborate within a customized website. In addition, it provides services such as Business Data Connectivity services to integrate external data, basic search services and workflow services.

This test auto-discovers the SharePoint processes, and for each process, reports the workload on the process and how efficiently that process handles the load. This way, the test leads you to the processes that are very busy and provides pointers to what could be keeping them busy.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each SharePoint Foundation process

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Active threads	Indicates the number of threads that are currently executing in SharePoint code of this process.	Number	Many active threads is an indicator of a bottleneck.
Incoming page requests	Indicates the number of incoming requests to access a particular page in the last second.	Number	This measure is a good indicator of the workload on this process.
Requests being processed currently	Indicates the requests that are currently processed by this SharePoint process.	Reqs	
Avg execution time of requests processed	Indicates the average time taken by this process for executing the requests that are	Secs	Ideally, this value should be low. If the value of this measure increases steadily, then it indicates a performance bottleneck.

Measurement	Description	Measurement Unit	Interpretation
	processed in the last second.		
Requests rejected	Indicates the number of page requests that were rejected by this process during the last second.	Number	Ideally, the value of this measure should be zero.
Requests responded to by the SharePoint server	Indicates the number of page requests that were responded by this SharePoint process during the last second.	Number	
Throttled page requests	Indicates the number of page requests that have been throttled by this process during the last measurement period.	Number	
Executing SQL queries	Indicates the number of SQL queries that are currently executing on this SharePoint server.	Number	
Query execution time	Indicates the average time taken by this SharePoint server to execute the SQL queries.	Secs	If the time taken to execute a query is high, it indicates that the query is unoptimal or there may be a database slowdown.
Native heaps in use	Indicates the number of native heaps that are currently in use by this SharePoint process.	Number	
Native heaps allocated by process	Indicates the number of native heaps that are allocated by this SharePoint process.	Number	

Measurement	Description	Measurement Unit	Interpretation
Global heap size	Indicates the size of the global heaps that are used by this SharePoint process for cache related activity.	MB	
Size of all per thread native heaps	Indicates the size of the native heaps that are used by all the threads that are being executed by this SharePoint process.	MB	

6.1.4 SharePoint Foundation Search Schema Test

The Search feature of the Microsoft SharePoint server not only makes it possible to search through content, documents, and people within the SharePoint sites, but also through external sources such as Windows file shares, public Microsoft Exchange server folders, and standard web sites.

The **Archival** and **Schema** plugins are internal components of the Microsoft SharePoint server Search engine, typically responsible for processing the metadata of indexed documents. By monitoring these components, administrators can efficiently evaluate how well the Microsoft SharePoint server search feature is functioning, identify irregularities early, and fine-tune the Microsoft SharePoint server to ensure peak performance of the search engine.

This test monitors the performance of the SharePoint Foundation Search Schema and Alias Mapping Plugin, and enables an informed assessment of its processing ability.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results each for the *ProfileImport* and *Portal_Content* instances

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.

Parameters	Description
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Documents processed by schema plugin	Indicates the number of documents that are processed by this schema plugin during the last measurement period.	Number	
Properties processed by schema plugin	Indicates the number of properties that are processed by this schema plugin during the last measurement period.	Number	
Aliases loaded	Indicates the number of aliases that have been currently loaded to this schema plugin.	Number	
Aliases have been mapped	Indicates the total number of aliases that have been currently mapped to this schema plugin during the last measurement period.	Number	
Aliases ignored as they are duplicates	Indicates the number of aliases that the schema currently ignored as they are duplicates during the last measurement period.	Number	

Measurement	Description	Measurement Unit	Interpretation
Aliases refreshed from the database	Indicates the number of aliases that have been refreshed from the database during the last measurement period.	Number	

6.1.5 SharePoint Foundation Search Gatherer Test

The search functionality can be described in its simplest form as a Web page where the user defines his or her search query. The index role can be configured to run on its own Microsoft SharePoint server, or run together with all the other roles, such as the Web service, Excel Services and Forms Services. It performs its indexing tasks following this general workflow:

a. SharePoint stores all configuration settings for the indexing in its database.

b. When activated, the index will look in SharePoint's databases to see what content sources to index, and what type of indexing to perform, such as a full or incremental indexing.

c. The index service will start a program called the Gatherer, which is a program that will try to open the content that should be indexed.

d. For each information type, the Gatherer will need an Index Filter, or IFilter, that knows how to read text inside this particular type of information. For example, to read a MS Word file, an IFilter for .DOC is needed.

e. The Gatherer will receive a stream of Unicode characters from the IFilter. It will now use a small program called a Word Breaker; its job is to convert the stream of Unicode characters into words.

f. However, some words are not interesting to store in the index, such as "the", "a", and numbers; the Gatherer will now compare each word found against a list of Noise Words. This is a text file that contains all words that will be removed from the stream of words.

g. The remaining words are stored in an index file, together with a link to the source. If that word already exists, only the source will be added, so one word can point to multiple sources.

h. If the source was information stored in SharePoint, or a file in the file system, the index will also store the security settings for this source. This will prevent a user from getting search results that he or she is not allowed to open.

i. Since the success of an indexing operation also depends upon how the Gatherer program functions, administrators need to keep their eyes open for irregularities in the functioning of the gatherer, so that such anomalies are detected instantly, and corrected before they can stall the indexing process.

This test monitors the performance of the SharePoint Foundation Search Gatherer, and reports issues in its performance (if any).

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results each for the *ProfileImport* and *Portal_Content* instances

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Filtering threads in the system	Indicates the current number of filtering threads in the system.	Number	
Threads waiting for documents	Indicates the number of threads that are currently waiting for documents.	Number	These threads are not currently doing any work and will eventually be terminated. If you consistently have more than Max Threads/Hosts idle threads you can schedule an additional crawl. If this number is 0 then you are starved. Do not schedule another crawl in this time period and analyze the durations of your

Measurement	Description	Measurement Unit	Interpretation
			crawls during this time to see if they are meeting your freshness goals. If your goals are not being met you should reduce the number of crawls.
Threads waiting for network response from the filter process	Indicates the number of threads that were waiting for a response from the filter process.	Number	If you figure out that there is no activity that is taking place as far as this measure is concerned, and if the value of this measure is equal to the Filtering threads in system measure, it indicates a network issue or the unavailability of the server that is crawling into.
Threads committing transactions	Indicates the number of threads that are committing transactions.	Number	
Threads waiting for plug- ins to complete an operation	Indicates the number of threads currently waiting for plug-ins to complete an operation.	Number	These threads have the filtered documents and are processing it in one of several plug-ins. This is when the index and property store are created.
Threads loading transactions from persisted crawl queue	Indicates the number of transactions that are loaded from the persisted crawl queue.	Number	
Threads processing links	Indicates the number of threads that are processing links.	Number	
Filtering processes in the system	Indicates the number of filtering processes that are active in the system.	Number	
Filter objects in the system	Indicates the number of filter objects in the	Number	

Measurement	Description	Measurement Unit	Interpretation
	system.		
Documents waiting for robot threads	Indicates the number of documents that are waiting for robot threads.	Number	If the value of this measure is 0, then it implies that all the threads are filtering threads.
Currently connected admin clients	Indicates the number of currently connected admin clients.	Number	
Amount of resources allowed for the Gatherer service	Indicates the amount of resources that the Gatherer service is allowed to use.	Number	
Servers recently accessed by the system	Indicates the number of servers that were recently accessed by the system.	Number	
Servers currently unavailable	Indicates the number of servers that are currently unavailable to the system.	Number	A server becomes unavailable if the requests made to the server is timed out.
Available cached stemmer instances	Indicates the number of cached stemmer instances in the system.	Number	Stemmers are nothing but components shared by the Search and Indexing engines that generate inflected forms for a word. Too many stemmer instances that are cached may indicate a resource usage problem.
System I/O rate	Indicates the rate at which the system IO disk traffic is detected during back off period.	KB/Sec	During a back-off period, indexing is suspended. To manually back off the gatherer service, pause the search service. If the search service itself generates the back-off, an event will be recorded and the search service will be paused

Measurement	Description	Measurement Unit	Interpretation
			automatically. There is no automatic restart, so you must manually start the search service in order to end a back-off state. Note that there is little reason to start the search service until you have solved the problem that caused the back-off in the first place.
Timeouts	Indicates the number of timeouts detected by the system during the last measurement period.	Number	Ideally, this value should be zero.
Documents filtered	Indicates the rate at which the documents are filtered in the system.	KB/Sec	If this rate is decreasing over time, you should perform some troubleshooting to find out why your server is not filtering documents. Look for memory issues, processor issues, network issues, or site hit frequency rules that slow the gatherer process.
Documents successfully filtered	Indicates the rate at which the documents are filtered successfully in the system.	KB/Sec	
Documents delayed due to site hit frequency rules	Indicates the number of documents that were currently delayed due to site hit frequency rules.	Number	If you have a plethora of rules and this number is steadily increasing over time, consider relaxing or simplifying your site hit frequency rules. A very high number may indicate a conflict in the rules that the gatherer cannot resolve or follow with efficiency.
Document entries	Indicates the number of	Number	

Measurement	Description	Measurement Unit	Interpretation
currently in memory	document entries that are currently available in the memory of the system.		
Documents filtered	Indicates the total number of documents filtered in the system during the last measurement period.	Number	
Documents successfully filtered	Indicates the total number of documents that are successfully filtered in the system during the last measurement period.	Number	If the value of this measure is less than the value of the Documents filtered measure, use the gatherer logs to figure out the cause for the documents that are attempting to be filtered but are failing.

6.1.6 Distributed Cache Service Test

SharePoint uses the Distributed Cache to store data for very fast retrieval across all entities. The Distributed Cache service provides in-memory caching services to several features in SharePoint Server 2013. Some of the features that use the Distributed Cache service include:

- Newsfeeds
- Authentication
- pOneNote client access
- Security Trimming
- Page load performance

Besides services, several caches that exist in SharePoint 2013 depend upon the Distributed Cache service for their proper functioning.

Any server in the farm running the Distributed Cache service is known as a cache host. A cache cluster is the group of all cache hosts in a SharePoint Server 2013 farm. A cache host joins a cache cluster when a new application server running the Distributed Cache service is added to the farm. When using a cache cluster, the Distributed Cache spans all application servers and creates one

cache in the server farm. The total cache size is the sum of the memory allocated to the Distributed Cache service on each of the cache hosts.

If the distributed cache is not able to service requests efficiently, it is bound to significantly impact the performance of the dependent services/caches. Furthermore, it will add significantly to the processing overheads of SharePoint, as poor cache usage translates into increased database accesses. If this is to be prevented, administrators should keep a close watch on the distributed cache's ability to service requests, rapidly detect poor cache usage patterns, and accurately pinpoint the reason for the same – is it because adequate objects are not cached in the distributed cache? If so, why? Is it owing to insufficient cache size? Will allocating more memory to the cache help or should more servers be added to the cache cluster? The **Distributed Cache Service** test helps answer all these questions! This test continuously monitors the requests to the cache, reports the count of requests serviced and rejected by the cache, and thus enables administrators to ascertain how well the cache is utilized. In the event of poor cache usage, close scrutiny of these test results will provide administrators with useful pointers to what is impeding cache usage and whether/not right-sizing the cache will help clear the bottleneck.

Target of the test : A Microsoft SharePoint Server 2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache data transferred rate	Indicates the number of cached entries transferred per second.	Number	

Measurement	Description	Measurement Unit	Interpretation
Cache hit count	Indicates the number of requests serviced by the cache during the last measurement period.	Number	A high value is desired for this measure. A sudden/steady dip in this value indicates that the cache is unable to process requests, thereby increasing direct database accesses.
Cache hit ratio	Indicates the percentage of requests that were serviced by the cache.	Percent	A high value is desired for this measure. A sudden/steady drop in this value is indicative of poor cache usage, which in turn can cause direct database accesses to increase and strain the database. One of the common reasons for a low cache hit ratio is insufficient memory allocation to the cache. In the absence of adequate memory resources, the cache may not be able to hold many frequently-accessed objects within, and may hence not be able to service many requests. Under such circumstances, you may want to consider allocating more memory to the cache. Here are a few recommendations from Microsoft with regard to how to size the distributed cache: • The Distributed Cache service actually uses twice the allocated amount of RAM, using the extra for housekeeping. In a small farm with fewer than 10,000 users, Microsoft recommends allocating 1GB of RAM

Measurement	Description	Measurement Unit	Interpretation
			for the Distributed Cache. This can be either a dedicated server or collocated with other SharePoint services, such as the Web Application Service. Beyond this the recommendation is using dedicated servers for the cache. A medium farm with fewer than 100,000 users should look to allocate around 2.5GB for the cache, and a large farm with up to 500,000 users should set aside around 12GB of RAM allocated for the cache. • It is a very strong recommendation that you should not allocate more than 16GB to any one Cache Host. This may cause the Cache Service to timeout during housekeeping operations and become unresponsive for several seconds at a time. If you need a cache size of greater than 16GB, it is better to use multiple servers in a Cache Cluster. You can have up to a maximum of 16 hosts in a Cache Cluster.
Cache miss count	Indicates the number of requests that were not serviced by the cache since the last measurement period.	Number	Ideally, the value of this measure should be low. A sudden/steady increase in this value is indicative of poor cache usage, which in turn can cause direct database accesses to increase and strain the database.

Measurement	Description	Measurement Unit	Interpretation
Cache read requests rate	Indicates the number of read requests to the cache per second, during the last measurement period.	Number	A high value for these measures is often indicative of heavy load on the distributed cache. In such a situation, for better cache performance, it is recommended that you opt for the dedicated mode of cache deployment. In this mode, all services other than the Distributed Cache service are stopped on the application server that runs the Distributed Cache service, thus ensuring that all critical resources on the server are at at the disposal of the distributed cache. This in turn, will help the cache handle the load efficiently!
Cache write requests rate	Indicates the number of write requests to the cache per second, during the last measurement period.	Number	
Total cache read requests	Indicates the total number of read requests received by the cache since the last measurement period.	Number	
Total cache write requests	Indicates the total number of write requests received by the cache since the last measurement period.	Number	

6.2 The SharePoint Server Layer

The tests mapped to this layer report the composition and state of the farm in which the target SharePoint server operates, captures health analyzer alerts related to server status, reads ULS logs and reports problem conditions logged therein, and also tracks timer jobs that run on the server.

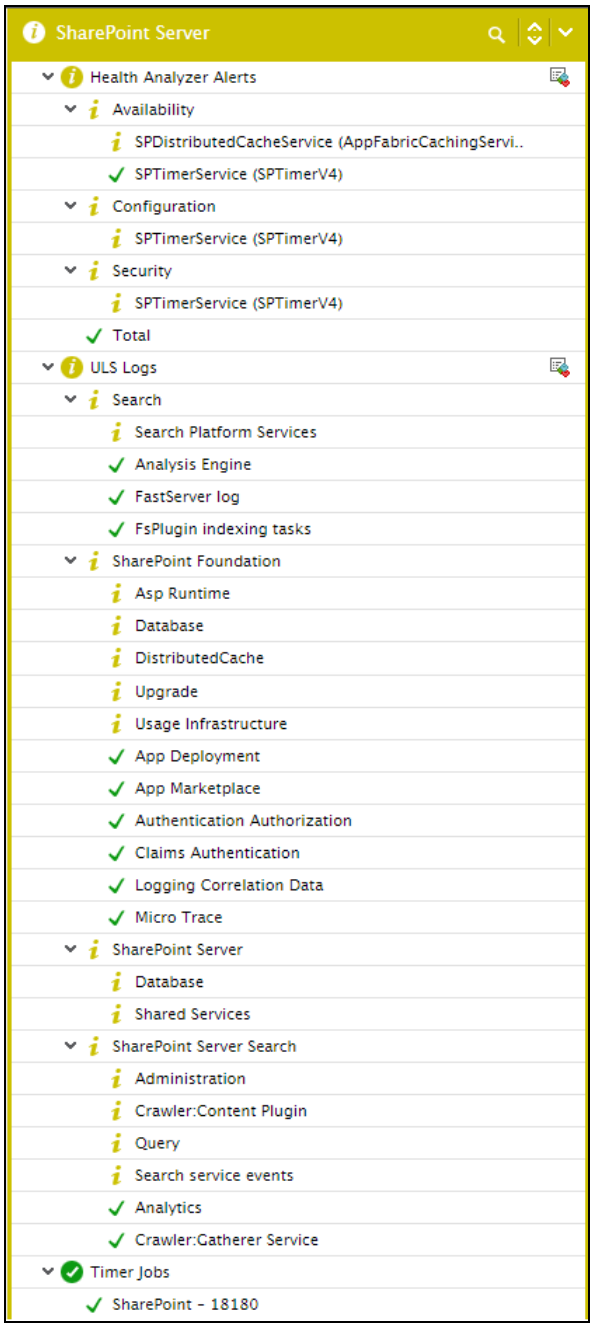


Figure 6.4: The tests mapped to the SharePoint Server layer

6.2.1 Timer Jobs Test

A timer job runs in a specific Windows service for SharePoint 2013. Timer jobs perform infrastructure tasks for the Timer service, such as clearing the timer job history and recycling the Timer service. Timer jobs also perform tasks for web applications, such as sending email alerts. A timer job contains a definition of the

service to run and specifies how frequently the service is started. The SharePoint Timer service (SPTimerv4) runs timer jobs.

By tracking timer jobs run for web applications, administrators can quickly detect job failures. This is exactly what the **Timer Jobs** test does! For each web application, this test reports the count of successful and failed timer jobs. Administrators are proactively alerted if even a single timer job fails! Deeps diagnostics reported by the test also provides details about the failed jobs, thereby enabling you to troubleshoot better.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each web application on the SharePoint server being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide

Parameters	Description
	these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	• The user should be part of the following groups on the eG agent host:
	  • Administrators
	  • WSS_ADMIN_WPG
	  • IIS_USRS
	  • Performance Monitor Users
	  • WSS_WPG
	  • Users
	To know how to add a user to one of these groups, refer to Section **4.3**.
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**.
	It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.

Parameters	Description
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Successful jobs	Indicates the number of timer jobs for this web application that were successful.	Number	
Failed jobs	Indicates the number of jobs run for this web application that failed.	Number	Ideally, the value of this measure should be 0. If a non-zero value is reported, use the detailed diagnosis of this measure to know which jobs failed, on which server, and when the failure occurred.

6.2.2 ULS Logs Test

The Unified Logging Service (ULS) writes SharePoint Foundation events to the SharePoint Trace Log, and stores them in the file system. ULS logging, when implemented effectively, can provide very useful information for developers, server administrators, and support personnel alike. The ULS logs can collect data at varying levels depending on the logging settings. Typically, every ULS log

record indicates the diagnostic area and the specific category under the diagnostic area that has been traced.

Using the **ULS Logs** test, you can capture the number and nature of messages of various types and levels that are logged in the ULS logs. These statistics are grouped by area and category, so that you can instantly isolate the problem-prone categories and the diagnostic areas they belong to. This way, you will be enabled to investigate issues more efficiently and resolve them quickly.

For this test to run and report metrics, you need to enable the collection of health data on the SharePoint server. To know how to achieve this, refer to 6.2.2.1

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each category in each diagnostic area

First-level descriptor: Area

Second-level descriptor: Category

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a

Parameters	Description
	SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	
	• The user should be part of the following groups on the eG agent host:
	
	  • Administrators
	
	  • WSS_ADMIN_WPG
	
	  • IIS_USRS
	
	  • Performance Monitor Users
	
	  • WSS_WPG
	
	  • Users
	
	To know how to add a user to one of these groups, refer to Section **4.3**.
	
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.
	
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**.

Parameters	Description
	It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Medium severity messages	Indicates the number of messages of a medium severity that are currently logged in the ULS log for this category of this area.	Number	Medium severity messages represent all messages except Verbose and VerboseEx messages. Such messages record all high- level information about operations that were performed. These messages provide enough detail to construct the data flow and sequence of operations. Administrators or support professionals could use such messages to troubleshoot issues. Use the detailed diagnosis of this

Measurement	Description	Measurement Unit	Interpretation
			measure to view the complete description of the top-10 recent medium severity messages logged in the ULS log for a specific category of an area.
High severity messages	Indicates the number of messages of a high severity that are currently logged in the ULS log for this category of this area.	Number	High severity messages record all events that are unexpected but which do not stop the processing of a solution. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent high severity messages logged in the ULS log for a specific category of an area.
Monitorable messages	Indicates the number of monitorable messages that are currently logged in the ULS log for this category of this area.	Number	Monitorable messages capture all unrecoverable events that limit the functionality of the solution but do not stop the application. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent monitorable messages logged in the ULS log for a specific category of an area.
Warning messages	Indicates the number of warning messages that are currently logged in the ULS log for this category of this diagnostic area.	Number	This message type indicates a potential problem or issue that might require attention. You should review and track warning messages for patterns over time. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent warning messages logged in the

Measurement	Description	Measurement Unit	Interpretation
			ULS log for a specific category of an area.
Error messages	Indicates the number of error messages that are currently logged in the ULS log for this category of this area.	Number	A message of this type indicates an urgent condition. You should investigate all error events. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent error messages logged in the ULS log for a specific category of an area.
Critical messages	Indicates the number of critical messages that are currently logged in the ULS log for this category of this area.	Number	This message type indicates a serious error that has caused a major failure in the solution. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent critical messages logged in the ULS log for a specific category of an area.
Unexpected messages	Indicates the number of unexpected messages logged in the ULS log for this category of this area.	Number	Unexpected messages record events that cause solutions to stop processing. Use the detailed diagnosis of this measure to view the complete description of the top-10 recent unexpected messages logged in the ULS log for a specific category of an area.

Use the detailed diagnosis of the *Medium severity messages* measure to view the complete description of the top-10 recent medium severity messages logged in the ULS log for a specific category of an area.

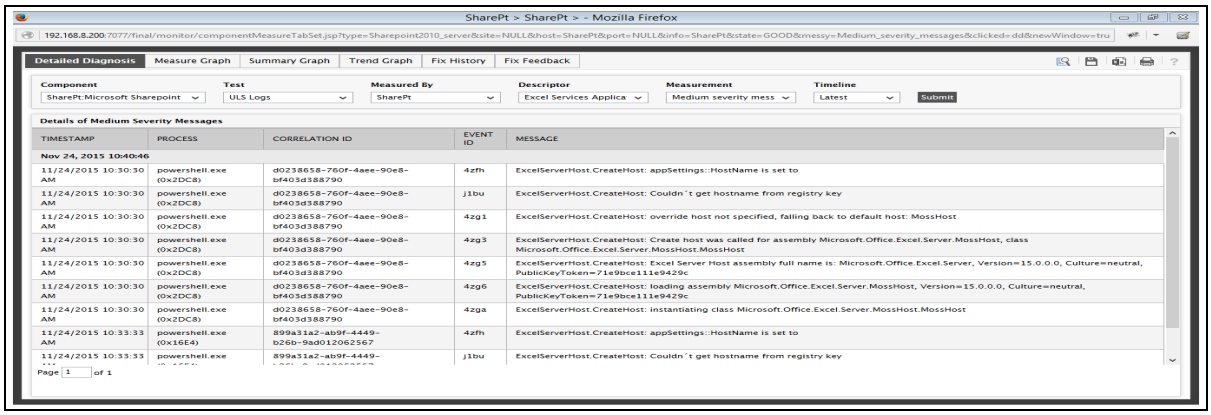


Figure 6.5: The detailed diagnosis of the Medium severity messages measure

Use the detailed diagnosis of the *High severity messages* measure to view the complete description of the top-10 recent high severity messages logged in the ULS log for a specific category of an area.

Details of High Severity Messages

TIMESTAMP	PROCESS	CORRELATION ID	EVENT ID	MESSAGE
Mar 01, 2016 12:32:26				
2/29/2016 10:58:01 PM	NodeRunnerAnalytics1-a4c2e451-5 (0x08E0)	00000000-0000-0000-0000-000000000000	aiy1o	Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487
2/29/2016 10:58:23 PM	NodeRunnerAdmin1-a4c2e451-5659- (0x08E0)	00000000-0000-0000-0000-000000000000	aiy1o	Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487
2/29/2016 10:58:30 PM	**NodeRunnerContent1-a4c2e451-565 (0x02AC)**	**00000000-0000-0000-0000-000000000000**	**aiy1o**	**Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487**
2/29/2016 10:58:53 PM	NodeRunnerIndex1-a4c2e451-5659- (0x0FC0)	00000000-0000-0000-0000-000000000000	aiy1o	Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487
2/29/2016 10:58:53 PM	NodeRunnerQuery1-a4c2e451-5659- (0x1004)	00000000-0000-0000-0000-000000000000	aiy1o	Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487
2/29/2016 11:00:01 PM	NodeRunnerAnalytics1-a4c2e451-5 (0x08E0)	00000000-0000-0000-0000-000000000000	aiy1o	Microsoft.Ceres.CoreServices.Node.NodeController : Already configured with version (poll) 487

Figure 6.6: The detailed diagnosis of the High severity messages measure

The detailed diagnosis of all the measures reported by the **ULS Logs** test also point to a correlation ID. Correlation Ids are GUIDs assigned to events which transpire during the lifecycle of a resource request. An administrator can then use the correlation Id to locate and isolate the request in the ULS log. Correlation Ids also span machine boundaries, so in the event a conversion crosses a machine boundary, such as a Web front-end calling a Web service on an application server, etc., a unique Correlation Id is assigned to the conversation enabling a complete view of the request and what transpired during the operation. This way, administrators can dig deeper and troubleshoot issues more effectively.

6.2.2.1 Configuring the eG Agent to Monitor ULS Logs

The **ULS Logs** test can run and report metrics only if **health data collection** is enabled on the target SharePoint server. To achieve this, follow the steps below:

1. In the SharePoint management console, select the **Monitoring** node under **Central Administration.** Then, click on the **Configure usage and health data collection** option under **Reporting** (see Figure 6.7).

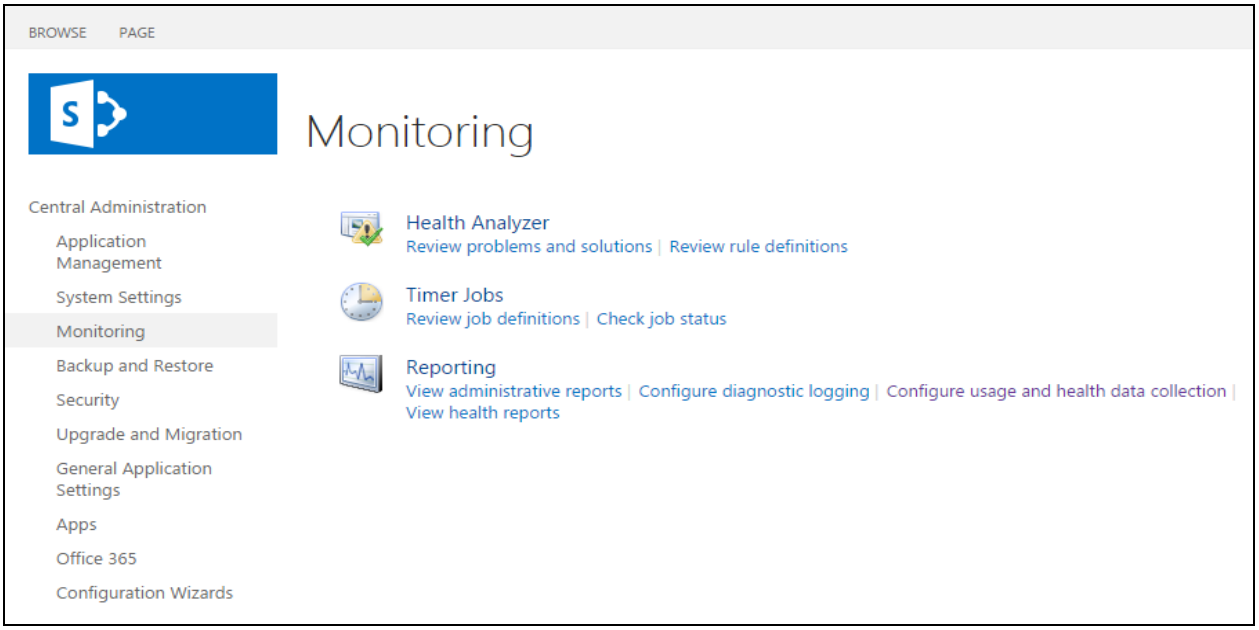


Figure 6.7: Selecting the Configure usage and health data collection option

2. Figure 6.8 will then appear.

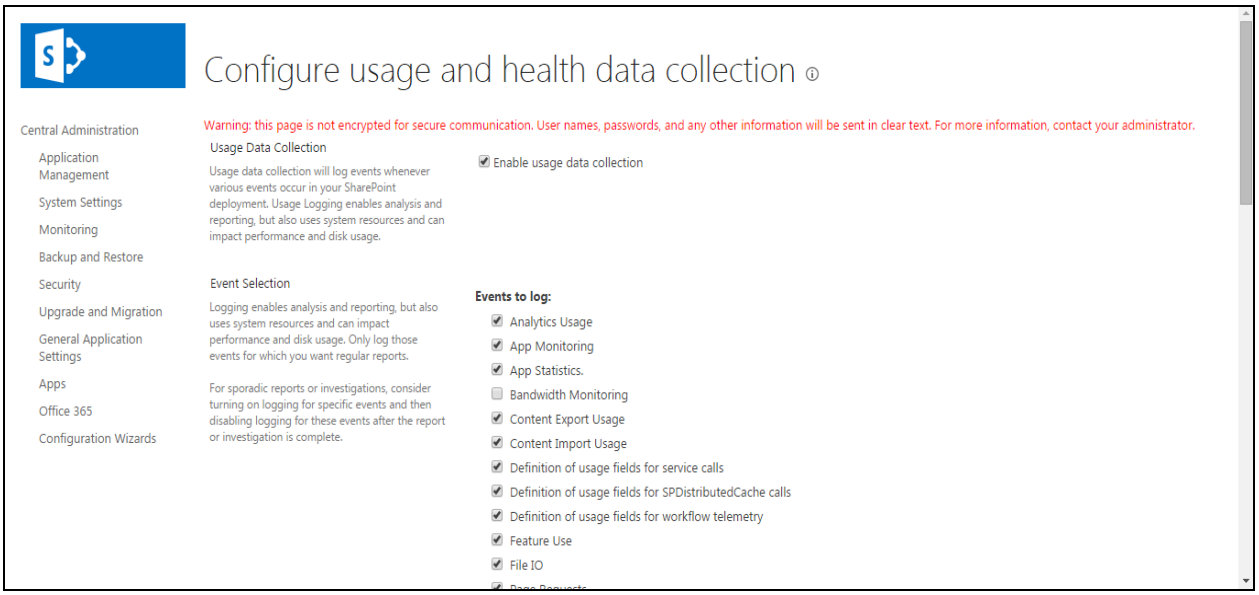


Figure 6.8: Scrolling down the 'Configure usage and health data collection' page

3. Scroll down Figure 6.9 and then select the **Enable health data collection** check box that becomes visible.

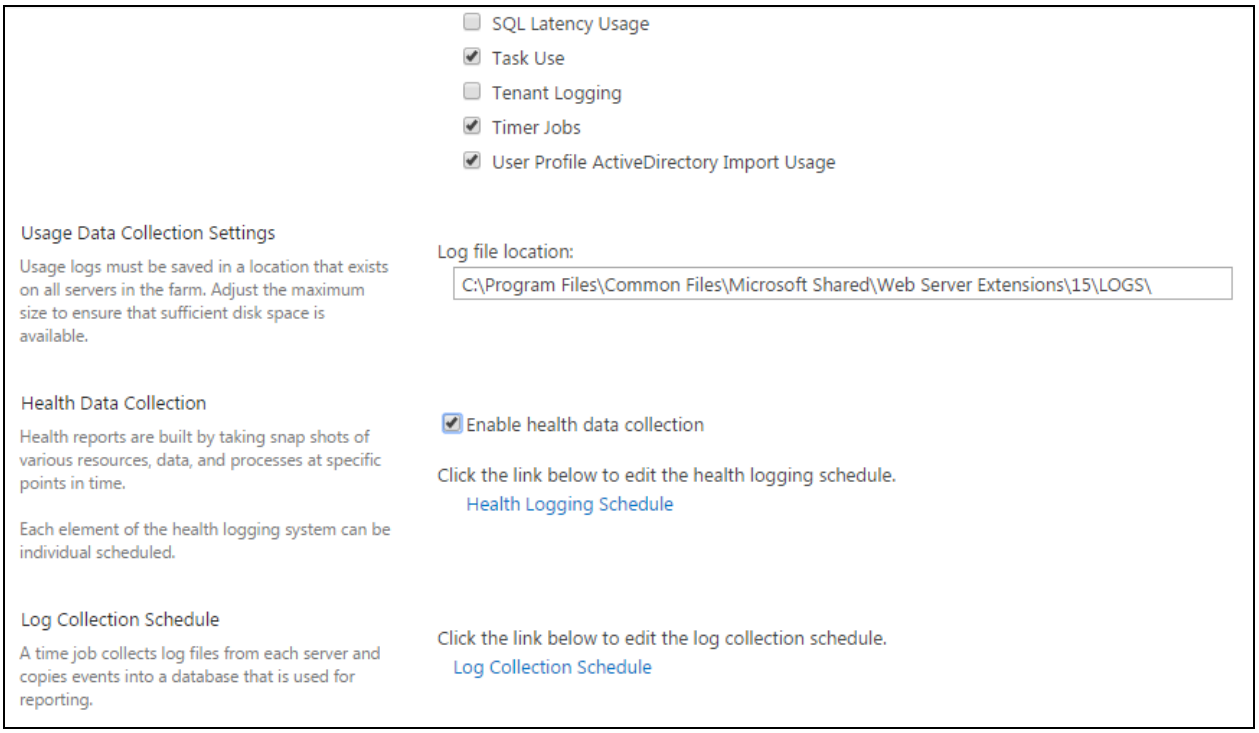


Figure 6.9: Enabling health data collection

6.2.3 Health Analyzer Alerts

SharePoint includes a tool named SharePoint Health Analyzer that enables you to diagnose and resolve configuration, performance, and usage problems. SharePoint Health Analyzer runs predefined health rules against servers in the farm. A health rule runs a test and returns an alert that tells you the outcome of the test. Every alert will indicate its severity – i.e., whether it is an Error, Warning, Information, or a Rule execution failure. Also, depending upon their nature, alerts are also automatically grouped into any of the standard categories, namely – Security, Performance, Configuration, or Availability – or can be part of any user-configured category. Every alert will also indicate the category to which it belongs.

The **Health Analyzer Alerts** test captures these alerts, ascertains their severity and category, and reports the count of alerts that were raised per severity for every category of alerts. You can also use the detailed diagnostics provided by this test to view the complete alert messages, the health rules that generated the alerts, and the server and services that were impacted by the problems for which the alerts were generated. This will not only lead you to the problem areas, but will also shed light on the probable problem cause, so that you can resolve the issue quickly.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each alert category

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typicaly, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If**

Parameters	Description
	Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.

Parameters	Description
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Error messages	Indicates the total number of error alerts of this category that were generated by the Health Analyzer.	Number	Ideally, the value of this measure should be 0. If a non-zero value is reported, then use the detailed diagnosis of this measure to understand the errors that occurred and the servers and services impacted by the same.
Warning messages	Indicates the total number of warning alerts of this category	Number	Ideally, the value of this measure should be 0. If a non-zero value is reported, then use the detailed

Measurement	Description	Measurement Unit	Interpretation
	that were generated by the Health Analyzer .		diagnosis of this measure to view the warning messages and the servers and services that may be impacted by the warnings.
Information messages	Indicates the total number of information alerts of this category that were generated by the Health Analyzer.	Number	Use the detailed diagnosis of this measure to view the information messages and the servers and services that they pertain to.
Rule execution failure messages	Indicates the total number of rule execution failure messages of this category that were generated by the Health Analyzer.	Number	Ideally, the value of this measure should be 0. If a non-zero value is reported, then use the detailed diagnosis of this measure to view the descriptive messages and to determine which servers and services failed because of rule execution failure.

Use the detailed diagnosis of the *Error messages* measure to understand what errors occurred, when, and which servers and services impacted by the same.

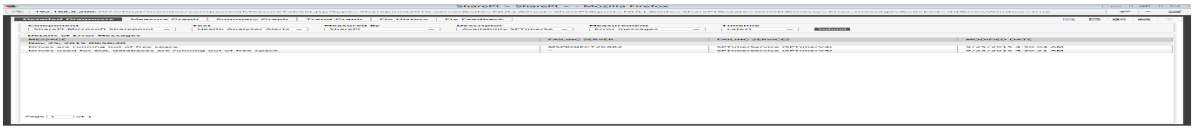


Figure 6.10: The detailed diagnosis of the Error messages measure

Use the detailed diagnosis of the *Warning messages* measure to view the warning messages and the servers and services that will potentially be impacted if the warnings are ignored.

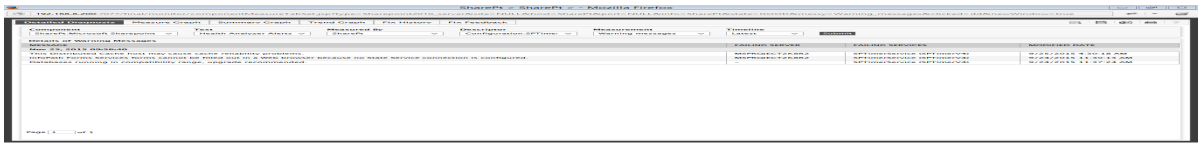


Figure 6.11: The detailed diagnosis of the Warning messages measure

Use the detailed diagnosis of the *Information messages* measure to view the information messages and the servers and services they pertain to.

Figure 6.12: The detailed diagnosis of the Information messages measure

Use the detailed diagnosis of the *Rule execution failure* messages measure to view the descriptive execution failure messages and to determine which servers and services failed because of rule execution failure.

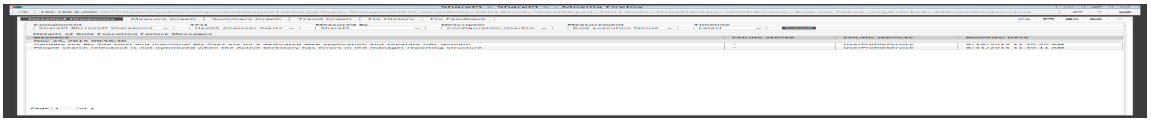


Figure 6.13: The detailed diagnosis of the Rule execution failure messages measure

6.2.4 Backup and Restores Test

A backup is a copy of data that is used to restore and recover that data after a system failure. If a backup job fails, then all the data that could not be backed up cannot be recovered at the time of system failure, thus resulting in significant data loss. This is why, it is imperative that administrators be instantly alerted if any backup or restore job fails. This is exactly what the **Backup and Restores** test does! This test monitors each configured backup directory (local and/or remote), tracks the backups job and restores from every directory, and reports the count of backup and restore jobs that succeeded and/or failed on that directory. This way, the test notifies administrators as soon as a backup or restore job fails and also points them to the exact directory where the failure occurred. Detailed diagnostics provided by this measure also lead you to what exactly caused the backup or restore activity to fail, thereby enabling you to resolve issues quickly and ensure smooth operations.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each Dir Path configured for monitoring

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host:

Parameters	Description
	◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
Dir Path	Provide the full path to the backup and/or restore directory to be monitored. Multiple paths can be provided as a comma-separated list. For example – *C:\BackupSite,C:\RestoreSite,D:\BackupDir*. Your specification can include both local and remote directories. For example - *C:\BackupSite,C:\RestoreSite,\\192.168.9.70\backup\250216*. However, bear the following points in mind when including remote directory paths in your specifications: • While specifying the path of a remote directory, make sure that your specification • begins with \\(two forward slashes) followed by the IP/hostname of the remote server in which the directory resides. This should be followed by the full path of the remote directory to be monitored. For example - *\\192.168.9.70\backup\250216*. • Your Dir Path specification can include the path to multiple remote directories. Each

Parameters	Description
	of these directories can be in a different remote server. However, all these remote servers should operate in the same domain. • A single user in the remote domain should have access to all the remote directories configured against Dir Path.
Remote Server Domain	**This parameter is applicable only if the Dir Path specification includes one/more remote directories**. In this case, against Remote Server Domain, specify the domain to which the servers hosting the remote directories belong. If your Dir Path specification does not include any remote directories, set remote server domain to *none*. **Note:** • Only a single domain name can be specified against Remote Server Domain. • For proper results, all the servers that host the remote directories configured against Dir Path should belong to the Remote Server Domain you specify.
Remote Server User Name and Remote Server Password	**These parameters are applicable only if the Dir Path specification includes one/more remote directories**. In such a case, against these parameters, specify the credentials of a user who fulfills the following conditions: • Should be a valid user in the Remote Server Domain that you have configured; • Should be a user who has at least **Read-only** access to all the remote directories configured for monitoring against the Dir Path parameter. However, if the Dir Path specification does not include any remote directories, then you can set both Remote Server User Name and Remote Server Password to *none*.
Confirm Password	Confirm the Remote Server Password by retyping it here. **This parameter again is applicable only if the Dir Path specification includes one/more remote directories**.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option.

Parameters	Description
	The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Failed backups	Indicates the number of backups to this directory that failed currently.	Number	Ideally, the value of this measure should be 0. If this measure reports a non-zero value, then use the detailed diagnosis of this measure to figure out which backup jobs failed, when the failure occurred, what error caused the failure, what backup method was employed, who initiated the backup, and many other details regarding the backup jobs that failed. Using these details, you can troubleshoot the failure easily.
Successful backups	Indicates the number of backups to this directory that succeeded presently.	Number	Ideally, the value of this measure should be high. Use the detailed diagnosis of this measure to know which backup jobs succeeded.
Failed restores	Indicates the number of restores from this directory that failed currently.	Number	Ideally, the value of this measure should be 0. If this measure reports a non-zero value, then use the detailed

Measurement	Description	Measurement Unit	Interpretation
			diagnosis of this measure to figure out which restore jobs failed, when the failure occurred, what error caused the failure, what restore method was employed, who initiated the backup, and many other details regarding the failed restore jobs. Using these details, you can troubleshoot the failure easily.
Successful restores	Indicates the number of restores from this directory that succeeded presently.	Number	Ideally, the value of this measure should be high. Use the detailed diagnosis of this measure to know which restore jobs succeeded.

Use the detailed diagnosis of the Successful backups measure to know which backup jobs succeeded.

Figure 6.14: The detailed diagnosis of the Successful backups measure

6.2.5 Site Availability Test

Use this test to check the availability and responsiveness of configured SharePoint sites. Unavailable/slow sites can be accurately identified in this process.

Typically, the test emulates an HTTP/S request to a configured site, and if that request results in a valid HTML response from the server, the test reports that the site is available. Sometimes however, users may not be able to login to the web site but the server may still reply back with a valid HTML page where in the error message, say, "Invalid Login". In this case, the test will report that the site is available (since we got a valid HTML response). To be able to correctly detect that the site could not be accessed, you can additionally configure this test to search the content of the site for a specific

text string. Typically, this should be a text string that you will find in the web page that you have configured for monitoring, if that page had loaded properly. If the test does not find the string configured in the monitored page, it will automatically report that the content is invalid. This way, administrators can easily detect that the site is unavailable, even if one measure of the test reports that it is.

This test is disabled by default. To enable the test, go to the **ENABLE / DISABLE TESTS** page using the menu sequence : Agents -> Tests -> Enable/Disable, pick the *Microsoft SharePoint* as the desired **Component type**, set *Performance* as the **Test type**, choose the test from the **DISABLED TESTS** list, and click on the **<** button to move the test to the **ENABLED TESTS** list. Finally, click the **Update** button.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for the DisplayName of each Site URL configured for monitoring

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Site URLs	Provide a comma-separated list of site URLs that you want to monitor. Your specification should be of the following format: *<DisplayName>:<Site_URL>*, where DisplayName is any name using which you want to uniquely identify a site, and Site_URL is the complete URL of the site to be monitored. For example, to monitor the site with URL, *http://www.cscorp.com/homepage.html*, your site url specification can be: *Company:http://wwww.csscorp.com/homepage.html*. To monitor multiple sites, your specification can be: *Company:http://wwww.csscorp.com/homepage.html, Payroll:http://192.168.10.95:10818/login.html*. The DisplayNames will appear as the descriptors of the test.
User name, Password, and Confirm password	These parameters are to be set only if a specific user name / password has to be specified to login to the web page (i.e., Site URL) that you have configured for monitoring. In this case, provide valid login credentials using the Username and

Parameters	Description
	Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box. • If the web page to be monitored does not require any authorization, then set the User Name and Password parameters to *none*. • Some servers however, support NTLM (Integrated Windows) authentication, where valid login credentials are mandatory. In other words, a *none* specification will not be supported by such servers. Therefore, in this case, against each configured URL, you will have to provide a valid User name in the format: *domainname**username*, followed by a valid Password. • If multiple Site URLs have been configured for monitoring, then you will have to provide a User name and Password for each configured URL. In this case, the multiple user names and passwords will have to be provided as a comma-separated list.
Validity String	Typically, the test emulates an HTTP/S request to a configured site; if that request results in a valid HTML response from the server, the test reports that the site is available. Sometimes however, users may not be able to login to the web site but the server may still reply back with a valid HTML page where in the error message, say, "Invalid Login". In this case, the test will report that the site is available (since we got a valid HTML response). To be able to correctly detect that the site could not be accessed, you can additionally configure this test to search the content of the site for a specific text string. Specify the text string to search for, in the Validity String text box. Typically, this should be a text string that you will find in the web page that you have configured for monitoring, if that page had loaded properly. If the test does not find the string configured in the monitored page, it will automatically report that the content is invalid. This way, administrators can easily detect that the site is unavailable, even if one measure of the test reports that it is.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Web availability	Indicates whether this	Percent	Availability failures could be caused

Measurement	Description	Measurement Unit	Interpretation
	site is available or not.		by several factors such as the server process(es) being down, the server being misconfigured, a network failure, etc. Temporary unavailability may also occur if the server is overloaded. Availability is determined based on the response code returned by the server. A response code between 200 to 300 indicates that the server is available. The value 100% for this measure indicates that the site is available, and the value 0 indicates that it is not.
Response code	Indicates the response code that the server returned when this site was accessed.	Number	Typically, 2xx codes indicate success. The 4xx codes are intended for cases in which the client may have erred, and the 5xx codes for the cases in which the server is aware that it has erred. 3xx codes indicate action to be taken (normally automatically) by the client in order to fulfill the request.
Response time	Indicates the time taken by the server to respond to the request it received for this site.	Secs	Response time being high denotes a problem. Poor response times may be due to the server being overloaded or misconfigured. If the URL accessed involves the generation of dynamic content by the server, backend problems (e.g., an overload at the application server or a database failure) can also result in an increase in

Measurement	Description	Measurement Unit	Interpretation
			response time.
Content validity	Indicates whether the content that was searched for was found in this site or not.	Percent	If the configured search string is found, this measure will report the value 100%. In the event that the string is not found, this measure will report 0. If the Web availability measure reports the value 100, but the Content validity measure reports the value 0, it could indicate that the the site is unavailable, and hence, could not be accessed.
Content length	Indicates the size of the content returned by the server for this site request.	Number	Typically the content length returned by the server for a specific URL should be the same across time. Any change in this metric may indicate the need for further investigation on the server side.

6.3 SharePoint Search Content Feed Layer

The key components of the SharePoint content feeding chain are:

- Crawl Database
- Crawl Component
- Content Processing Component
- Index Component

When search queries execute slowly, administrators need to figure out where in the feeding chain the slowdown originated. The tests mapped to this layer run checks on all the aforesaid components, so that administrators can accurately isolate the probable cause of this slowdown.

6.3.1 Search Gatherer Threads Test

Search in SharePoint 2013 enables users to find relevant information more quickly and easily than ever before and makes it easy for Search administrators to customize the search experience.

The search architecture consists of the following areas:

- Crawl and content processing
- Index
- Query processing
- Search administration
- Analytics

Figure 6.15 depicts how these components work together to implement the search functionality in SharePoint 2013.

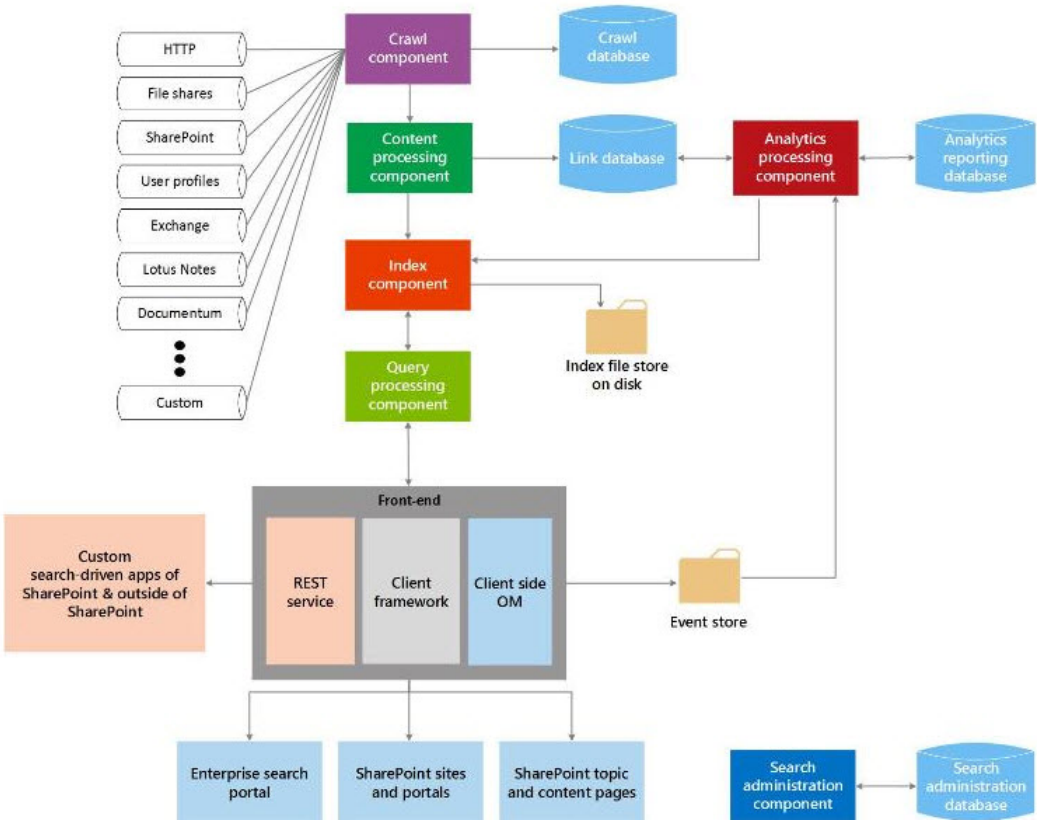


Figure 6.15: How search works in SharePoint 2013?

From Figure 6.15, it is clear that the crawl component lays the foundation for the search mechanism! The crawl component crawls content sources to collect crawled properties and metadata from crawled items and sends this information to the content processing component. This means that if the crawl component is unable to crawl the content hosts, it could impact the speed of every dependent operation – be it content processing, indexing, query processing etc. – thereby crippling the entire search engine! Hence, for search in SharePoint 2013 to be quick and efficient, administrators should primarily keep an eye on the crawl component, swiftly isolate painpoints in crawling, and clear them rapidly. To achieve this, administrators can use the **Search Gatherer Threads** test. This test monitors the crawling process and reveals how well the crawling worker threads are doing their jobs. While at it, the test proactively notifies administrators of a potential slowdown (if any) n crawling and pinpoints what is causing the slowdown – a hungry content host? or improperly configured crawls? .

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Threads accessing the network	Indicates the number of threads that are waiting on the content host to return the requested content.	Number	If this number is consistently high then you are either network bound or you are bound by a "hungry" host. If you are not meeting your crawl freshness goals, you can either change your crawl schedules to minimize overlapping crawls or look at the remote repositories you are crawling to optimize them for

Measurement	Description	Measurement Unit	Interpretation
			more throughput.
Filtering threads	Indicates the current number of filtering threads in the system.	Number	If the value of the Threads accessing the network measure is close to that of the Filtering threads measure, it is an indication that a bottleneck exists at the content source/host. When this happens, you may also want to check whether processor usage on the crawl component servers is low. Likewise, look for disk latency issues on the crawl database. If all the above exist, it is a clear indicator that the content host/source is where the bottleneck lies!
Idle threads	Indicates the number of threads that are currently waiting for documents.	Number	These threads are not currently doing any work and will eventually be terminated. If you consistently have a more than Max Threads/Hosts idle threads you can schedule an additional crawl. If this number is 0 then you are starved. Do not schedule another crawl in this time period and analyze the durations of your crawls during this time to see if they are meeting your freshness goals. If your goals are not being met you should reduce the number of crawls.

6.3.2 Search Gatherer Transactions Test

Crawls, when scheduled to occur too frequently, can significantly impact the processing ability of the content processing component, the level of I/O activity on the crawl database, and ultimately, the

search throughput! Likewise, a resource-starved content processing component and/or a crawl database can also considerably slowdown SharePoint search, as they may not be able to handle the workload generated by the crawler! This is why, when end-users complain of slow searching by SharePoint, administrators need to be able to quickly figure out where the bottleneck is and how to clear it – should the crawl schedules be changed so that less crawls occur? Or should the processing power of the content processor and crawl database change in tandem with the frequency of crawls? This is where the **Search Gatherer Transactions** test helps!

This test monitors the transactions on the crawl component and reports the count of transactions that are waiting for processing by the content processor and those that have completed processing. In the process, the test turns the spotlight on a potential processing slowdown and accurately pinpoints what is causing it – is it owing to too many crawls? Or is it because the content processor and/or the crawl database are incorrectly sized? Based on the results of this test, administrators can clearly understand what needs to be fine-tuned and how.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Waiting transactions	Indicates the number of transactions that are currently waiting to be processed by the content processing component.	Number	Ideally, this value should be low (less than a few thousand). If so, it implies that content processing is keeping up with content crawling. On the other hand, if the value of

Measurement	Description	Measurement Unit	Interpretation
			this measure is high and/or consistently rising, then it means that the crawl component is pushing more data for processing than what the content processing component can handle. This will slow down content processing and eventually affect SharePoint search! Under such circumstances, you can do either of the following: • Provide more processing power to the content processing component, so that it is able to handle the load imposed by the crawl component. You can also add more content processing components to uniformly distribute the processing load. • Reconfigure the crawl component to run crawls less frequently, so that the crawl component does not overload the content processing component
Transactions in progress	Indicates the number of transactions that are currently being processed by the crawl component.	Number	This is a good indicator of the current load on the crawl component.
Completed transactions	Indicates the number of transactions that are completed	Number	If this value is very high (say, greater than a few hundred), it means that too many transactions are getting completed and are

Measurement	Description	Measurement Unit	Interpretation
			written to the crawl database, causing disk activity on the database to increase. At this juncture, check the crawl database for disk latency. If the disk latency and disk queue length are also high, you can conclude that the crawl database is where the bottleneck is.

6.3.3 Search Submission Test

Like problems in the content acquisition process, snags in the content processing routine can also delay searching. Content processing in SharePoint is performed by the content processing component (CPP) and the index component. Once crawling is complete, the Content plug-in on the crawl component first routes the content to the *Content Submission Service* (CSS) of the content processing component. An instance of the CSS runs alongside each instance of a content processing component. Once the content plug-in on the crawl component establishes a session with the CSS, the CSS load-balances the incoming content by uniformly distributing the content to the content processing components (CPC). Upon receipt of documents from the CSS, the content processing component processes the documents and then sends them to the indexer for indexing.

If a crawler session is unexpectedly terminated by CSS, then some crawled content may not even reach the CSS, and will hence not be processed or indexed; this will eventually impact the search service! Moreover, if CSS is not able to push its document load to the content processing component fast enough, documents may get timed out from the CSS itself, and will hence be omitted from the search index; this again will result in a poor search experience. Likewise, if the content processing component suffers a slowdown, document processing and indexing will be significantly delayed, which in turn can affect querying. If such problems are to be avoided, administrators should closely monitor the availability and processing ability of the CSS and the CPC, and rapidly isolate bottlenecks. This is where the **Search Submission** test helps.

This test periodically checks the sessions to CSS, monitors how quickly the CSS load-balances the content and transmits it to the CPC, and measures the processing capacity of the CPC. When users complain of their search queries being slow, then this test will shed light on the probable cause of the delay – is it owing to sudden/sporadic breaks in the crawler sessions to CSS? Is it because of a load-

balancing bottleneck experienced by the CSS? Or is it due to a processing slowdown at the CPC? Based on the findings reported by this test, administrators can initiate the appropriate remedial measures.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Aborted sessions	Indicates the number of sessions that aborted since the start of the component.	Number	Ideally, the value of this measure should be 0. A high value is a cause for concern as it indicates frequent breaks in the crawler sessions on the CSS. Too many broken sessions can seriously impede the transfer of crawled content from the crawler to the CSS, resulting in incomplete transfers! This warrants an investigation into the reason for the frequent session failures.
Active sessions	Indicates the number of crawler sessions that are currently active on the CSS.	Number	This is a good indicator of the current load on the CSS.

Measurement	Description	Measurement Unit	Interpretation
Available callbacks	Indicates the current number of callbacks ready for consumption, but not yet consumed by the client.	Number	Once the content processing component processes the content it receives and writes it to the index, it sends out a 'call back' to the content plug- in on the crawler indicating the processing status of that content. A high value for this measure indicates that while the CPC has been able to generate callbacks, many of these callbacks have not yet been consumed by – i.e., have not yet reached – the crawler. This hints at an error in network communication between the crawler and the CPC.
Total callbacks	Indicates the total number of callbacks produced by the submission service since the start of the component.	Number	You may want to compare the value of the Available callbacks measure with that of this measure to understand what fraction of callbacks is still to be consumed by the crawl component.
Client polls	Indicates the total number of client polls since the start of the component.	Number	Each time a client refreshes the session to check for callbacks this measure will be incremented.
Client submits	Indicates the total number of submits performed by clients since the start of the component.	Number	
Skipped documents	Indicates the total number of documents skipped in the	Number	A non-zero value is desired for this measure. A high value is disconcerting as it indicates that too

Measurement	Description	Measurement Unit	Interpretation
	submission service before being delivered to the content processing component.		many crawled documents are not reaching the CPC for processing as the CSS disregards them. Further investigation into the reasons is necessitated.
Timed out documents	Indicates the total number of documents that timed out in the submission service.	Number	A low value is desired for this measure. A high value implies that the search index may not include many crawled documents as they have been timed out of the submission queue itself. This in turn may result in ineffective search queries. You may hence want to reset the timeout value for documents in the submission service.
Flows used for feeding	Indicates the current number of flows used for feeding.	Number	The CPC uses Flows and Operators to process the content. Flows define how to process content, queries and results and each flow processes one item at a time. The number of current flows is hence an indicator of the number of documents that are being processed by the CPC.
Pending items	Indicates the current number of items delivered to the content processing component but where no callback has yet been received.	Number	A high value or a consistent rise in the value for this measure could indicate a bottleneck in content processing.

6.3.4 Search Flow Test

Content processing in SharePoint is performed by the content processing component (CPC) and the index component.

The Content Processing Component (CPC) uses Flows and Operators to process the content (see Figure 6.16). Flows define how to process content, queries and results and each flow processes one item at a time. Flows consist of operators and connections organized as graphs. This is where activities like language detection, word breaking, security descriptors, content enrichment (web service callout), entity and metadata extraction, deep link extraction and many others take place. The flow has branches that handle different operations, like inserts, deletes and partial updates.

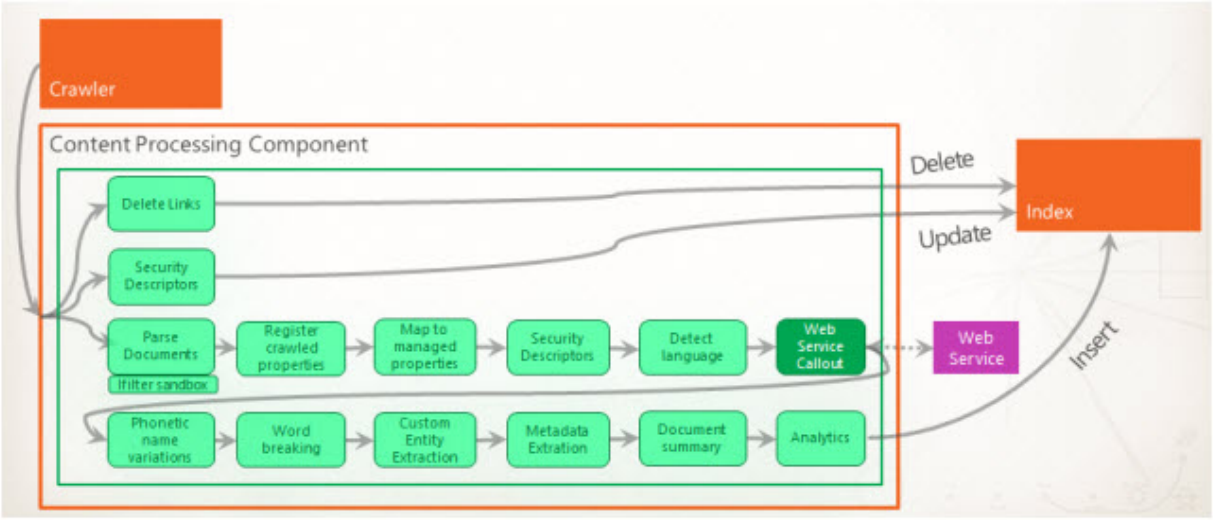


Figure 6.16: Flows and operators in CPC

Once content is processed by the CPC, the index component receives the processed items from the CPC and writes them to the search index. The index component also handles incoming queries, retrieves information from the search index, and sends back the result set to the query processing component.

Whether it is the CPC that fails to process the content rapidly or the index component that writes to the index slowly, what suffers is the end-user's experience with SharePoint search! To ensure that SharePoint delivers to users a fast and flawless searching experience, administrators should not only be able to detect slowdowns before they impact query processing, but also tell where the slowdown originated – is it with the CPC or the index component? The **Search Flows** test answers this question accurately! This test monitors the flows on CPC, keeps track of documents that are in queue waiting to be processed by the flows, and reports how quickly the CPC and the index component process the

enqueued contents. While at it, the test points to potential bottlenecks in content processing and accurately isolates the source of the bottleneck – is it the CPC or the index component?

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the Microsoft SharePoint server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total inbound items	Indicates the total number of items placed on input queues.	Number	
Items queued for processing	Indicates the number of items that are currently in queues in front of input operators that are ready for processing.	Number	A high value or a consistent increase in the value of this measure is indicative of bottlenecks in content processing.
Active threads	Indicates the number of threads that are currently active.	Number	
Input queue empty time	Indicates the total time spent by input operators waiting for items.	Millisecs	If this value is low (say, less than a thousand), it indicates that the input queues are rarely ever empty! You may then want to check the processor usage on the CPC

Measurement	Description	Measurement Unit	Interpretation
			component. If this is very high, it is a clear indication that the CPC is stressed and could be the key contributor to the slowdown in content processing. On the other hand, if the value of this measure is high (say, over a thousand) , it indicates that the input queues are empty for long time spells. This implies that the CPC is processing content quickly. In this case, check the disk I/O and latency on the index component. If these parameters are high, it implies that the index component is stressed and is unable to handle the load imposed by the CPC. You can thus conclude that the bottleneck lies with the index component.
Input queue full time	Indicates the total time spent waiting for space to become available on input queues.	Millisecs	If this value is high (say, over a thousand), it indicates that the CPC is taking a long time to process the contents in the input queues and free up the queues! You may then want to check the processor usage on the CPC component. If this is very high, it is a clear indication that the CPC is stressed and could be the key contributor to the slowdown in content processing. On the other hand, if the value of this measure is low (say, less than

Measurement	Description	Measurement Unit	Interpretation
			a thousand), it indicates that the input queues are getting cleared very quickly. This implies that the CPC is processing content quickly. In this case, check the disk I/O and latency on the index component. If these parameters are high, it implies that the index component is stressed and is unable to handle the load imposed by the CPC. You can thus conclude that the bottleneck lies with the index component.

6.4 The SharePoint Documents Layer

Using the tests mapped to this layer, you can closely monitor the growth in the number and size of document libraries, documents, and lists.

Figure 6.17: The tests mapped to the SharePoint Documents Layer

6.4.1 SharePoint Document Libraries and Lists Test

Document libraries are collections of files that you can share with team members on a Web based on Microsoft Windows SharePoint Services. For example, you can create a library of common documents for a project, and team members can use their Web browsers to find the files, read them, and make comments. Users with Microsoft Office 2003 can check out and edit the files as if they resided on a local or network drive.

A list in SharePoint is used to store data across columns in separate rows. You can think of a list as a table in a database that will have columns and rows. You can think of a list as a table in a database

that will have columns and rows. You can also think of it as a spreadsheet with columns and rows. Items such as issues, software bugs, employee addresses, phone numbers, web site links or pretty much anything else can be stored.

To ensure that all the web applications deployed on the SharePoint farm have adequate storage resources at their disposal, administrators must make sure that document libraries and lists used by the web applications do not grow uncontrollably, both in number and in size. For this, administrators must keep a close watch on the growth of the document libraries and lists. This is where the **SharePoint Document Libraries and Lists** test helps! This test reports the total number of document libraries and lists created on SharePoint, tracks the rate at which these numbers are growing, and promptly alerts administrators to an abnormal increase in the number of document libraries and lists. In addition, the test also measures the size of document libraries from time to time, and intimates administrators if the size increases unexpectedly! The detailed diagnosis of this test also reports the top-10 document libraries and lists in terms of size, thus leading administrators to those libraries and lists that could be draining the storage resources of SharePoint.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each database of each type used by the SharePoint Server being monitored

First-level descriptor: Database type

Second-level descriptor: Database name

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the

Parameters	Description
	SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be

Parameters	Description
	monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Number of document libraries	Indicates the total number of document libraries on the SharePoint server.	Number	A consistent increase in the value of this measure could indicate that new document libraries are regularly created on SharePoint. You may want to check how much space these new libraries are consuming to understand the true impact of this addition on storage

Measurement	Description	Measurement Unit	Interpretation
			resources. You can use the detailed diagnosis of this measure to identify the top-10 document libraries in terms of size – i.e., space usage.
Documents in document libraries	Indicates the total number of documents in all document libraries on SharePoint.	Number	A consistent increase in the value of this measure could indicate the influx of new documents into existing document libraries or the creation of new libraries with a new set of documents. You may want to check how much space these new documents are consuming to understand the true impact of this addition on storage resources.
Size of document libraries	Indicates the total size of all the document libraries on SharePoint.	MB	A consistent increase in the value of this measure could be attributed to the addition of new document libraries, new documents, and large-sized documents.
Average number of documents per document library	Indicates the average number of documents per library.	Number	
Document library growth rate	Indicates the percentage growth in the number of document libraries handled by SharePoint, since the last measurement period.	Percent	A consistent increase in the value of this measure could indicate that new document libraries are regularly created on SharePoint. You may want to check how much space these new libraries are consuming to understand the true impact of this addition on storage resources.
Lists count	Indicates the number of lists on SharePoint.	Number	A consistent increase in the value

Measurement	Description	Measurement Unit	Interpretation
			of these measures could indicate that new lists are regularly created on SharePoint. You may want to check how much space these new lists are consuming to understand the true impact of this addition on storage resources. You can use the detailed diagnosis of the Lists measure to identify the top- 10 SharePoint lists in terms of size – i.e., space usage.
Lists growth rate	Indicates the percentage growth in the number if lists on SharePoint, since the last measurement period.	Number	
Attachments	Indicates the number of attachments on SharePoint.	Number	

The detailed diagnosis of the *Number of document libraries* measure lists the top 10 libraries in SharePoint with the maximum number of documents. Using this information, you can quickly identify that document library with the highest document count and also figure out the **PARENTWEBURL** of the web application with which the library is associated. If that web application grows abnormally in size or count of documents, this information will lead administrators to the exact document library that is responsible for it.

List of Top 10 Document Library

TIME	TITLE	DESCRIPTION	ITEMCOUNT	PARENTWEBURL
Jan 30, 2014 06:42:11				
	Documents	-	8	/
	Documents	-	4	/
	Documents	-	3	/sites/mysites
	Documents	-	2	/sites/testcomplete
	Documents	-	1	/sites/eginnovations
	Documents	-	1	/site
	Documents	-	0	/sites/quota
	Documents	-	0	/sites/new_site_pravat
	Documents	-	0	/sites/test

Figure 6.18: The detailed diagnosis of the Number of document libraries measure

The detailed diagnosis of the *Lists count* measure displays the top 10 lists in SharePoint with the maximum number of items. Using this information, you can quickly identify that list with is most heavily populated and also figure out the **PARENTWEBURL** of the web application with which the list

is associated. If that web application grows abnormally, this information will lead administrators to the exact list that may be responsible for it.

List of Top 10 Lists

TIME	TITLE	DESCRIPTION	ITEMCOUNT	PARENTWEBURL
Jan 30, 2014 06:42:11				
	Composed Looks	Use this list to store composed looks. These looks can be applied to this site by navigating to Site Settings and choosing Change the look.	18	/my

Figure 6.19: The detailed diagnosis of the Lists count measure

6.4.2 SharePoint Documents Test

Documents are stored within a document library in SharePoint. Documents add to the size of the sites, site collections, and web applications they are associated with. Significant and rapid spikes in the number and size of documents on the SharePoint server can hence cause sites, site collections, and ultimately, web applications to grow in size exponentially; in the long run, this may result in a severe space crunch in the content database. This is why, administrators need to keep a close watch on the number of documents handled by the SharePoint server and the space resources they use. To achieve this, administrators can use the **SharePoint Documents** test! This test periodically monitors the number and size of documents in the SharePoint server, reports abnormal document growth, and thus warns administrators of potential space contentions well before they actually occur!

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the SharePoint Server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in

Parameters	Description
	the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**.

Parameters	Description
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Number of documents in SharePoint	Indicates the total number of documents in the SharePoint server.	Number	A consistent increase in the value of this measure could indicate that new documents are created in SharePoint at regular intervals. You may want to check how much space these new documents are consuming to understand the true

Measurement	Description	Measurement Unit	Interpretation
			impact of this addition on storage resources.
Versions	Indicates the total number of document versions in SharePoint.	Number	A consistent increase in the value of this measure could indicate that newer versions of one/more existing documents are now available in SharePoint. This in turn implies that many outdated/obsolete documents may also exist in SharePoint. In the event of rapid growth in document count, you may want to delete the stale versions of documents so as to control the growth and make space for newer documents.
Size of all documents	Indicates the total size of all the documents n SharePoint.	MB	A consistent increase in the value of this measure could be attributed to the addition of new documents and/or large-sized documents.
Average size of a document	Indicates the average size of a document.	MB	With the help of the value of this measure, you can ascertain whether/not SharePoint is the container for documents of large sizes.
Documents growth rate	Indicates the percentage growth in the number of documents in SharePoint, since the last measurement period.	Percent	A consistent increase in the value of this measure could indicate there is a consistent addition of new documents to SharePoint. Compare the value of this measure with that of the Versions measure to understand whether the addition of newer 'versions' of existing documents is in any way contributing to the growth rate. If

Measurement	Description	Measurement Unit	Interpretation
			so, you may want to delete older versions of documents and unnecessary documents to curb the growth.
Number of file formats stored	Indicates the total number of file formats stored in SharePoint.	Number	Use the detailed diagnosis of this measure to know which file formats are stored in SharePoint.

6.4.3 SharePoint File Types Distribution Test

SharePoint users typically upload and/or download files of different types in a SharePoint environment. Administrators may choose to block some of these file types owing to various reasons. One of the most common reasons is to reduce space usage of files! Certain file types may not be critical to the business but may occupy significant space. If files of such types accumulate, they may not only deny space for business-critical information, but may even crash the sites they are uploaded to. To avoid this, the 'heavy' file types may be blocked.

But, how does an administrator know which file types are consuming space excessively? This is where the **SharePoint File Types Distribution** test helps! This test groups files uploaded to the SharePoint environment on the basis of their file types, and reports the number and total size of each file type. The percentage size distribution of every file type is also reported, so that administrators can instantly and accurately identify the file type that is hogging space! Using the detailed diagnosis of the test, you can easily pinpoint the exact file extensions that are occupying the maximum space.

By default, eG Enterprise groups a pre-defined set of file extensions under a file type. For instance, files with extensions .doc, .docx, .log, .msg, .odt, .pages, .rtf, .tex, .txt, .wpd, .and wps are by default grouped under the file type 'Text files'.Space usage statistics related to all the aforesaid extensions will hence be aggregated and reported for the measure group, "Text files". If required, you can add more extensions to a file type or remove existing extensions from a file type. For example, to make sure that files with the extensions, say .xls and .xlsx, are also classifed as "Text files", do the following:

1. Edit the eg_tests.ini file in the <EG_INSTALL_DIR>\manager\config directory.
2. In the [Sharepoint2010_server] section of the file, you will find entries for each file type. In this section, look for the following entry:

```
Text_ Files=.doc|Microsoft Word Document,.docx|Microsoft Word Open XML Document,.log|Log File,.msg|Outlook Mail Message,.odt|OpenDocument Text Document,.pages|Pages Document,.rtf|Rich Text Format File,.tex|LaTeX Source Document,.txt|Plain Text File,.wpd|WordPerfect Document,.wps|Microsoft, Works Word Processor Document
```

3. As you can see, the "Text_ Files" parameter is set to a pipe- separated list of *<DocumentType>,<FileExtension>* pairs. For instance, in the pair *Microsoft Word Document,.doc*, *.doc* is the file extension that will be grouped under the measure group, "Text files". *Microsoft Word Document* will be displayed as the *Document Type* of all files with extension .doc, in the detailed diagnosis . Now, to make sure that files with extensions .xls and.xlsx are also grouped under the "Text files" measure group, append the following entry to the "Text_Files" parameter:

   ```
   |Microsoft Excel,.xls|Microsoft Excel,.xlsx
   ```

   The full Text_Files entry will now read as follows:

   ```
   Text_ Files=.doc|Microsoft Word Document,.docx|Microsoft Word Open XML Document,.log|Log File,.msg|Outlook Mail Message,.odt|OpenDocument Text Document,.pages|Pages Document,.rtf|Rich Text Format File,.tex|LaTeX Source Document,.txt|Plain Text File,.wpd|WordPerfect Document,.wps|Microsoft, Works Word Processor Document|Microsoft Excel,.xls|Microsoft Excel,.xlsx
   ```

4. Finally, save the file.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for the SharePoint server being monitored.

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and

Parameters	Description
	increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain Name, Domain User, Domain Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be

Parameters	Description
	monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain Name text box, and then, enter the credentials of the user in the Domain User and Domain Password text boxes. To confirm the password, retype it in the Confirm Password text box.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Text files	Indicates the number of text files presently in SharePoint.	Number	
Text files size	Indicates the total size of	MB	

Measurement	Description	Measurement Unit	Interpretation
	all the text files.		
Text files distribution	Indicates the percentage of total space in the SharePoint environment that is occupied by the text files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that text files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Data files	Indicates the number of files of type data in the SharePoint environment.	Number	
Data files size	Indicates the total size of all data files.	MB	
Data files distribution	Indicates the percentage of total space in the environment that is occupied by the data files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that data files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.

Measurement	Description	Measurement Unit	Interpretation
Audio files	Indicates the number of files of type audio in the SharePoint environment.	Number	
Audio files size	Indicates the total size of all audio files.	MB	
Audio files distribution	Indicates the percentage of total space in the environment that is occupied by the audio files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that audio files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Video files	Indicates the number of files of type video in the SharePoint environment.	Number	
Video files size	Indicates the total size of all video files.	MB	
Video files distribution	Indicates the percentage of total space in the environment that is occupied by the video files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that video files are occupying almost all

Measurement	Description	Measurement Unit	Interpretation
			the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
3D image files	Indicates the number of files of type 3D images in the SharePoint environment.	Number	
3D images files size	Indicates the total size of all 3D image files.	MB	
3D image files distribution	Indicates the percentage of total space in the environment that is occupied by the 3D image files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that 3D image files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Raster image files	Indicates the number of files of type raster image in the SharePoint environment.	Number	
Raster image files size	Indicates the total size of all raster image files.	MB	
Raster image files distribution	Indicates the percentage of total space in the environment that is	Percent	You can compare the value of this measure with that of the other "distribution" measures to know

Measurement	Description	Measurement Unit	Interpretation
	occupied by the raster image files.		which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that raster image files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Vector image files	Indicates the number of files of type vector image in the SharePoint environment.	Number	
Vector image files size	Indicates the total size of all vector image files.	MB	
Vector image files distribution	Indicates the percentage of total space in the environment that is occupied by the vector image files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that vector image files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Page layout files	Indicates the number of files of type page layout in the SharePoint	Number	

Measurement	Description	Measurement Unit	Interpretation
	environment.		
Page layout files size	Indicates the total size of all page layout files.	MB	
Page layout files distribution	Indicates the percentage of total space in the environment that is occupied by the page layout files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that page layout files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Spreadsheet files	Indicates the number of files of type spreadsheet in the SharePoint environment.	Number	
Spreadsheet files size	Indicates the total size of all spreadsheet files.	MB	
Spreadsheet files distribution	Indicates the percentage of total space in the environment that is occupied by the spreadsheet files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that spreadsheet files are occupying almost all the space in the environment. In such a case, use

Measurement	Description	Measurement Unit	Interpretation
			the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Database files	Indicates the number of files of type database in the SharePoint environment.	Number	
Database files size	Indicates the total size of all database files.	MB	
Database files distribution	Indicates the percentage of total space in the environment that is occupied by the database files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that database files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Executable files	Indicates the number of files of type executable in the SharePoint environment.	Number	
Executable files size	Indicates the total size of all executable files.	MB	
Executables files distribution	Indicates the percentage of total space in the environment that is	Percent	You can compare the value of this measure with that of the other "distribution" measures to know

Measurement	Description	Measurement Unit	Interpretation
	occupied by the executable files.		which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that executable files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Game files	Indicates the number of files of type game in the SharePoint environment.	Number	
Game files size	Indicates the total size of all game files.	MB	
Games files distribution	Indicates the percentage of total space in the environment that is occupied by the game files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that game files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
CAD files	Indicates the number of files of type CAD in the SharePoint environment.	Number	

Measurement	Description	Measurement Unit	Interpretation
CAD files size	Indicates the total size of all CAD files.	MB	
CAD files distribution	Indicates the percentage of total space in the environment that is occupied by the CAD files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that CAD files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
GIS files	Indicates the number of files of type GIS in the SharePoint environment.	Number	
GIS files size	Indicates the total size of all GIS files.	MB	
GIS files size distribution	Indicates the percentage of total space in the environment that is occupied by the GIS files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that GIS files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.

Measurement	Description	Measurement Unit	Interpretation
Web files	Indicates the number of files of type web in the SharePoint environment.	Number	
Web files size	Indicates the total size of all web files.	MB	
Web files distribution	Indicates the percentage of total space in the environment that is occupied by the web files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that web files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Plugin files	Indicates the number of files of type plugin in the SharePoint environment.	Number	
Plugin files size	Indicates the total size of all plugin files.	MB	
Plugin files distribution	Indicates the percentage of total space in the environment that is occupied by the plugin files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that plugin files are occupying almost all

Measurement	Description	Measurement Unit	Interpretation
			the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Font files	Indicates the number of files of type font in the SharePoint environment.	Number	
Font files size	Indicates the total size of all font files.	MB	
Font files distribution	Indicates the percentage of total space in the environment that is occupied by the font files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that font files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
System files	Indicates the number of files of type system in the SharePoint environment.	Number	
System files size	Indicates the total size of all system files.	MB	
System files distribution	Indicates the percentage of total space in the environment that is	Percent	You can compare the value of this measure with that of the other "distribution" measures to know

Measurement	Description	Measurement Unit	Interpretation
	occupied by the system files.		which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that system files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Settings files	Indicates the number of files of type settings in the SharePoint environment.	Number	
Settings files size	Indicates the total size of all settings files.	MB	
Settings files distribution	Indicates the percentage of total space in the environment that is occupied by the settings files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that settings files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Encoded files	Indicates the number of files of type encoded in the SharePoint environment.	Number	
Encoded files size	Indicates the total size of	MB	

Measurement	Description	Measurement Unit	Interpretation
	all encoded files.		
Encoded files distribution	Indicates the percentage of total space in the environment that is occupied by the encoded files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that encoded files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Compressed files	Indicates the number of files of type compressed in the SharePoint environment.	Number	
Compressed files size	Indicates the total size of all compressed files.	MB	
Compressed files distribution	Indicates the percentage of total space in the environment that is occupied by the compressed files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that compressed files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.

Measurement	Description	Measurement Unit	Interpretation
Disk image files	Indicates the number of files of type disk image in the SharePoint environment.	Number	
Disk images files size	Indicates the total size of all disk image files.	MB	
Disk image files distribution	Indicates the percentage of total space in the environment that is occupied by the disk image files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that disk image files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Developer files	Indicates the number of files of type developer in the SharePoint environment.	Number	
Developer files size	Indicates the total size of all developer files.	MB	
Developer files distribution	Indicates the percentage of total space in the environment that is occupied by the developer files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that developer files are occupying

Measurement	Description	Measurement Unit	Interpretation
			almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Backup files	Indicates the number of files of type backup in the SharePoint environment.	Number	
Backup files size	Indicates the total size of all backup files.	MB	
Backup files distribution	Indicates the percentage of total space in the environment that is occupied by the backup files.	Percent	You can compare the value of this measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that backup files are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.
Miscellaneous files	Indicates the number of files that are not of any of types listed above, in the SharePoint environment.	Number	
Miscellaneous files size	Indicates the total size of all the other files.	MB	
Miscellaneous files distribution	Indicates the percentage	Percent	You can compare the value of this

Measurement	Description	Measurement Unit	Interpretation
	of total space in the environment that is occupied by all the other files.		measure with that of the other "distribution" measures to know which file type is hogging the space. A value close to 100% is a cause for concern, as it indicates that files of some random type are occupying almost all the space in the environment. In such a case, use the detailed diagnosis of the measure to know which file extensions specifically are eroding the space.

Use the detailed diagnosis of the Text files measure to view the file extensions grouped under Text files and the space usage of each extension.

Details of Text files

EXTENSION	DOCUMENT TYPE	FILES COUNT	TOTAL SIZE (MB)	FILE TYPES DISTRIBUTION (%)
Jan 19, 2017 10:45:12				
.txt	Plain Text File	5	176	89.53
.log	Log File	1	20.57	10.46
.docx	Microsoft Word Open XML Document	5	0.02	0.01

Figure 6.20: The detailed diagnosis of the Text files measure

6.5 The SharePoint Objects Layer

The tests mapped to this layer promptly capture the sporadic spikes or steady growth in the contents of the critical SharePoint data containers such as content databases, sites and site collections, and web applications. Overgrown applications and objects responsible for the uncontrollable growth can thus be isolated.

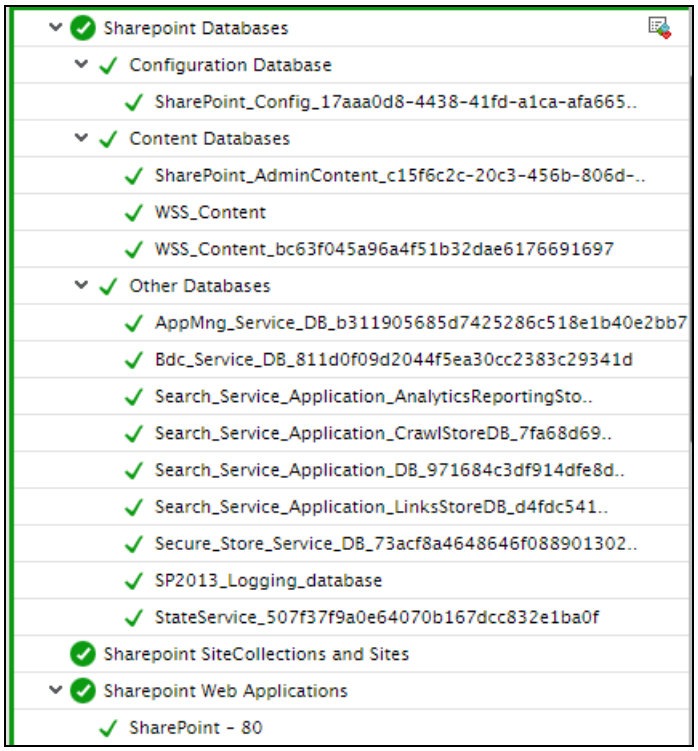


Figure 6.21: The tests mapped to the SharePoint Objects layer

6.5.1 SharePoint Databases Test

Different types of databases are typically installed for SharePoint. These database types are briefly discussed below:

- **Configuration Database:**

  The configuration database contains data about the following:

  - SharePoint databases
  - Internet Information Services (IIS) web sites
  - Web applications
  - Trusted solutions
  - Web Part packages
  - Site templates
  - Web applications

The configuration database also contains specific data for SharePoint 2013 farm settings, such as default quota settings and blocked file types.

- **Content Database:**

  Content databases store all content for a site collection. This includes site documents or files in document libraries, list data, Web Part properties, audit logs, and sandboxed solutions, in addition to user names and rights.

  All of the files that are stored for a specific site collection are located in one content database on only one server. A content database can be associated with more than one site collection.

  Content databases also store user data for Power Pivot for SharePoint, if you installed it in your SharePoint Server 2013 environment.

- **Other Databases:**

  Service Application databases such as App Management database, Business Data Connectivity database, Search service application database, Secure store service database Usage and Health Data Collection database, and many more are typically grouped under **Other Databases**.

These databases can grow pretty quickly, and if this growth is not tracked and controlled, users may be left with no space for SharePoint data. SharePoint administrators should hence prudently and proactively plan their data storage needs, accordingly size the databases, and effectively manage the space available in the databases, so that manageability, performance, and reliability issues do not arise. This is where the SharePoint Databases test helps!

Besides reporting the state of each database, this test also monitors the size, usage, and growth of every database, thus pointing administrators to those databases that are over-used or are exhibiting alarming growth patterns! In addition, the test provides hints for enhancing the overall performance of the content databases – will it help to cleanup the orphaned items? should the recycle bin storage space be reduced? should the content database host fewer site collections?

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each database of each type used by the SharePoint Server being monitored

First-level descriptor: Database type

Second-level descriptor: Database name

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typicaly, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host:

Parameters	Description
	◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Is database in use?	Indicates whether/not this database is in use.		The values that this measure can report and their corresponding numeric values are listed in the table below: Measure Value: Yes — Numeric Value: 1 Measure Value: No — Numeric Value: 0

Measurement	Description	Measurement Unit	Interpretation
			Note: By default, the measure reports the **Measure Value**s listed in the table above to indicate the usage state of the database. However, in the graph of this measure, the same will be represented using the numeric equivalents only.
Size	Indicates the current size of this database.	GB	The size requirements typically vary with database type. For instance, Configuration databases are unlikely to grow significantly, but Content databases are prone to rapid growth. Hence, Microsoft recommends that no content database be more than 200 GB in size. Please refer to the following link: *https://technet.microsoft.com/en-IN/library/cc678868.aspx*, for detailed information on the size and scaling considerations of the different types of SharePoint databases.
Disk space usage	Indicates the percentage disk space in the SQL server that is used by this database.	Percent	A high value for this measure is a cause for concern, as it indicates excessive disk space consumption by a database. Compare the value of this measure across databases of a type to identify that database which is eroding the disk space of the SQL server.
Database growth rate	Indicates the percentage growth in the size of this database since the last	Percent	A consistent rise in the value of this measure is a sign that the database is growing rapidly!

Measurement	Description	Measurement Unit	Interpretation
	measurement period.		Such rapid growth trends can be noticed more often in content databases. Since Microsoft recommends that no content database should be more than 200 GB in size, measures should be taken to control the growth of a content database. In this regard, you may want to consider the following measures: • Use an ootb Record Center as an archive for old content: The users must manually send each document to the RC using e.g. move and leave a link; note that only the latest major version with metadata is kept – all version history is lost. The information management policies supported by SharePoint for retention and disposition can be used to automate the cleanup. As the RC has its own content databases, the live collaboration databases will grow slower or even shrink as outdated information is moved to the archive. Keeping the live databases small ensures shorter recovery time; while the recovery time for the archived content can be considerable, but not business critical. Search must be configured appropriately to cover both live and archived content.

Measurement	Description	Measurement Unit	Interpretation
			• Use a third-party archiving solution for SharePoint. This has the same pros & cons as the previous option, but the functionality is probably better in relation to keeping version history and batch management of outdated content. Search must be configured appropriately to cover both live and archived content. • Use a third-party remote blob storage (RBS) solution for SharePoint so that documents are registered in the database, but not stored there. This gives smaller content databases, but more complicated backup and recovery as the content now resides both in databases and on disk. Provided that you don't lose both at the same time, the recovery time should be shorter. Search will work as before, as all content is still logically in the "database". • The databases size will shrink as data is actually deleted, and backup and recovery is more complicated as content is now both in the database and on disk. Search can be configured to also crawl and index the files on disk, but content ranking will suffer as the valuable metadata is lost.

Measurement	Description	Measurement Unit	Interpretation
			• Use powershell scripts or other code to implement the disposition of outdated content. The script can e.g. copy old documents to disk and delete old versions from the content database; the drawback being that all metadata will be lost and there is no link left in SharePoint. The databases size will shrink as data is actually deleted, and backup and recovery is more complicated as content is now both in the database and on disk. Search can be configured to also crawl and index the files on disk, but content ranking will suffer as the valuable metadata is lost.
Total orphaned items	Indicates the number of orphaned sites in this content database.	Number	This measure is reported only for 'Content Databases'. An Orphaned Site is where SharePoint only has partial information and not a complete set of data for a given site collection in your Windows SharePoint Services or SharePoint Portal Server content databases or configuration databases. The site may in fact still be viewable via the browser, but you may notice that many things are broken. If the Content database growth rate measure is increasing consistently, you may want to check the variations in the value of this measure over the same time period to figure out whether/not the existence of too many

Measurement	Description	Measurement Unit	Interpretation
			orphan sites is contributing to the growth in the size of the content database. If so, you may want to cleanup the orphan sites to right-size your database and to ensure optimum performance.
Site limit	Indicates the maximum number of site collections that this content database can host.	Number	This measure is reported only for 'Content Databases'. Microsoft strongly recommends limiting the number of site collections in a content database to 5,000. However, up to 10,000 site collections in a database are supported. Note that in a content database with up to 10,000 total site collections, a maximum of 2,500 of these can be non-Personal site collections. It is possible to support 10,000 Personal site collections if they are the only site collections within the content database. These limits relate to speed of upgrade. The larger the number of site collections in a database, the slower the upgrade with respect to both database upgrade and site collection upgrades. The limit on the number of site collections in a database is subordinate to the limit on the size of a content database that has more than one site collection. Therefore, as the number of site collections in a database increases, the average size of the site collections it contains must decrease.

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>Exceeding the 5,000 site collection limit puts you at risk of longer downtimes during upgrades. If you plan to exceed 5,000 site collections, Microsoft recommends that you have a clear upgrade strategy to address outage length and operations impact, and obtain additional hardware to speed up the software updates and upgrades that affect databases.</td></tr>
<tr><td>Configured site limit usage</td><td>Indicates the percentage of the configured site limit that is used by the content database.</td><td>Percent</td><td>This measure is reported only for ‘Content Databases’.
A value close to 100% indicates that the configured site limit is about to be reached.
By comparing the value of this measure across content databases, you can easily identify the database that hosts too many site collections. You may then have to reassess the ability of that content database to handle additional site collections, and accordingly decide whether to reconfigure the site limit or reduce the number of site collections hosted by the database.</td></tr>
<tr><td>Needs upgrade?</td><td>Indicates whether/not this database needs to be upgraded.</td><td></td><td>The values that this measure can report and their corresponding numeric values are listed in the table below:
<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table></td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
			Note: This measure reports the **Measure Value**s listed in the table above to indicate whether/not a database needs an upgrade. In the graph of this measure however, the same is represented using the numeric equivalents only.
Recycle bin storage space	Indicates the space used by the items present in the second stage recycle bin of this database.	MB	Recycle Bins are used to help users protect and recover data. Microsoft SharePoint Server supports two stages of Recycle Bins: • First-stage Recycle Bin • Second-stage Recycle Bin. When a user deletes an item, the item is automatically sent to the first-stage Recycle Bin. By default, when an item is deleted from the first-stage Recycle Bin, the item is sent to the second-stage Recycle Bin. A high value for this measure could indicate that a large amount of deleted data resides in the second stage recycle bin, unnecessarily consuming disk space and increasing the size of the database.
Recycle bin storage space growth rate	Indicates the percentage growth in the space used in the second stage recycle bin of this database, since the last measurement period.	Percent	A consistent increase in the value of this measure indicates that deleted data is steadily accumulating in the recycle bin; this is a cause of concern, as data in the second stage recycle bin can add megabytes to the overall size of the database!

Measurement	Description	Measurement Unit	Interpretation
			In case of content databases, every site collection has a second stage recycle bin and the size of this bin must not grow beyond 50 percent of the quota set for that site collection. You may want to reduce this percentage to ensure that the recycle bin does not grow too unwieldy and impact the size and performance of the content database.

6.5.2 SharePoint Farm Test

A SharePoint farm is a collection of SharePoint servers or SQL servers that work in concert to provide a set of basic SharePoint services that support a single site.

Since the primary purpose of any farm is to provide high availability to servers and services, administrators should be proactively alerted if that farm goes down. If not, end-users will be denied access to all servers and services riding on that farm for long periods of time!

Administrators will also require deep visibility into what servers and services make up the farm and what their current status is. Without this, unavailable servers/services can neither be identified, nor restored!

Moreover, until serious performance issues surface, administrators tend to remain clueless about which servers in a farm are updated/upgraded with critical patches/hot fixes and which are not. To avoid this, administrators should continuously track the upgrade status of the farm and of the servers in the farm.

The **SharePoint Farm** test addresses all these requirements! The test auto-discovers the SharePoint farm in which the monitored SharePoint server resides. Periodically, the test checks the status of this farm and alerts you if the farm goes offline. This way, you can initiate timely measures for restoring the farm to normalcy and in the process, ensure that users are able to access servers and services continuously. The test also reports the number, types, and names of servers in this farm and points you to the offline servers. Disabled service instances in the farm are also brought to light by this test. Additionally, the test also draws your attention to servers in a farm that need to be upgraded, so that you can quickly apply the required patches/hot fixes on those servers and maximize their performance.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the SharePoint farm in which the monitored SharePoint server operates

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.

Parameters	Description
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability

Parameters	Description
	• Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Status	Indicates the current status of this farm.		The values that this measure can report and their corresponding numeric values are listed in the table below: **Measure Value** / **Numeric Value** Offline / 1 Online / 0 **Note:** This measure reports the Measure Values listed in the table above to indicate the status of a farm. In the graph of this measure however, farm status is represented using the numeric equivalents only.
Needs upgrade?	Indicates whether/not this farm needs an upgrade.		The values that this measure can report and their corresponding numeric values are listed in the table below: **Measure Value** / **Numeric Value** Yes / 1 No / 0 **Note:** This measure reports the **Measure**

Measurement	Description	Measurement Unit	Interpretation
			Values listed in the table above to indicate whether/not a farm needs an upgrade. In the graph of this measure however, the same is represented using the numeric equivalents only. If this measure reports the value No, it could be because the patches were applied on the servers in the farm, but the SharePoint Products Configuration Wizard was not run after patch application on a few servers.
Total servers in farm	Indicates the total number of servers in this farm.	Number	Use the detailed diagnosis of this measure to know which servers are in the farm, the status of each server, whether/not that server needs upgrade, and if so, whether/not it can be upgraded.
Total service instances in farm	Indicates the total number of service instances in this farm.	Number	Within a farm, there are several services that run on one or more servers. These services provide basic functionality for SharePoint and regulate which services should run on which servers, in an effort to manage the impact on overall farm architecture and performance. Use the detailed diagnosis of this measure to know the services running in the farm and the servers they are running on. This way, when one or more of these servers go down, you will be able to identify the services that will be impacted.

Measurement	Description	Measurement Unit	Interpretation
Servers online	Indicates the number of servers in this farm that are online currently.	Number	Use the detailed diagnosis of this measure to know which servers are online, whether/not that server needs upgrade, and if so, whether/not it can be upgraded.
Servers offline	Indicates the number of servers in this farm that are offline currently.	Number	Ideally, the value of this measure should be 0. Use the detailed diagnosis of this measure to know which servers are offline, , whether/not that server needs upgrade, and if so, whether/not it can be upgraded.
Servers that need upgrade	Indicates the number of servers in this farm that need to be upgraded.	Number	Use the detailed diagnosis of this measure to know which servers require an upgrade.
Web front end servers	Indicates the number of web front end servers in this farm.	Number	Use the detailed diagnosis of this measure to know which are the web front end servers in the farm.
Application servers	Indicates the number of application servers in this farm.	Number	Use the detailed diagnosis of this measure to know which are the application servers in the farm.
Database servers	Indicates the number of application servers in this farm.	Number	Use the detailed diagnosis of this measure to know which database servers are in the farm.
Online service instances	Indicates the number of service instances running in this farm that are currently online.	Number	Use the detailed diagnosis of this measure to know which services are online and which servers they are running on.
Offline service instances	Indicates the number of service instances running in this farm that are currently offline.	Number	Ideally, the value of this measure should be 0. Use the detailed diagnosis of this

Measurement	Description	Measurement Unit	Interpretation
			measure to know which services are offline and which servers they are running on.
Disabled service instances	Indicates the number of service instances running in this farm that are currently disabled.	Number	Use the detailed diagnosis of this measure to know which services are disabled and which servers they are running on.

Use the detailed diagnosis of the *Total servers in farm* measure to know which servers are in the farm, the status of each server, whether/not that server needs upgrade, and if so, whether/not it can be upgraded. Offline servers in the farm and the ones needing an upgrade can thus be identified.

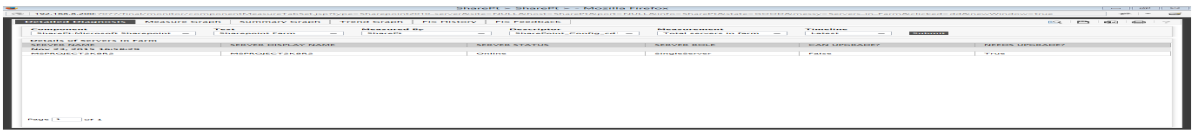


Figure 6.22: The detailed diagnosis of the Total servers in farm measure

Use the detailed diagnosis of the *Total service instances in farm* measure to know the services running in the farm and the servers they are running on. This way, when one or more of these servers go down, you will be able to identify the services that will be impacted.

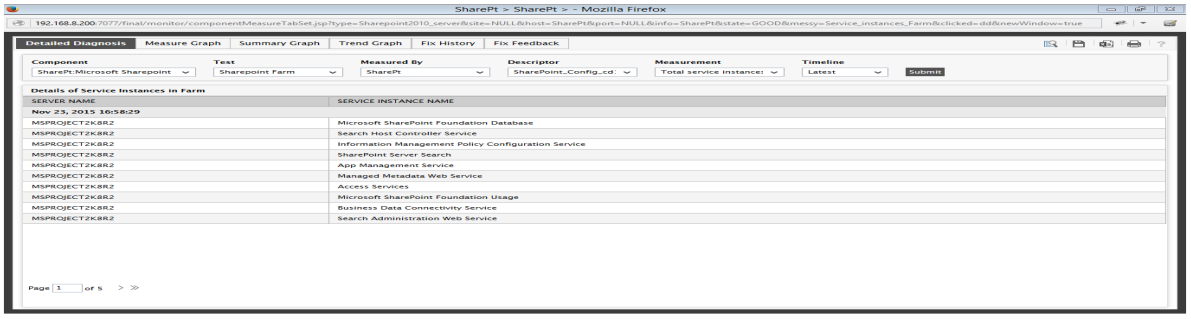


Figure 6.23: The detailed diagnosis of the Total service instances in farm measure

Use the detailed diagnosis of the *Servers online* measure to know which servers are online, whether/not that server needs upgrade, and if so, whether/not it can be upgraded.

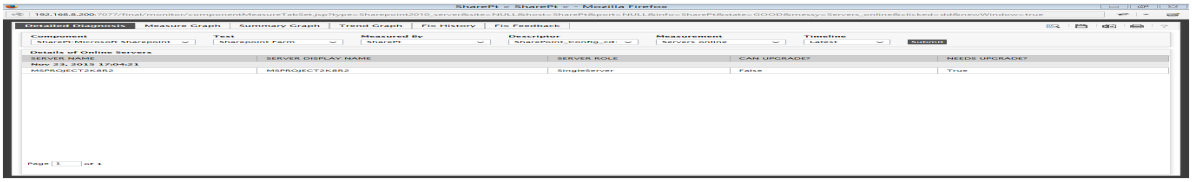


Figure 6.24: The detailed diagnosis of the Servers online measure

Use the detailed diagnosis of the *Servers that need upgrade* measure to know which servers require an upgrade.

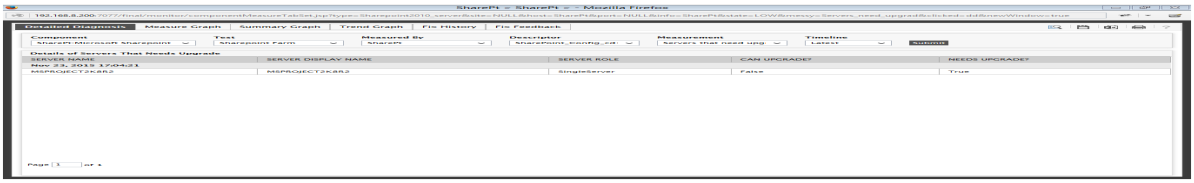


Figure 6.25: The detailed diagnosis of the Servers that need upgrade measure

Use the detailed diagnosis of the *Web front end servers* measure to know which are the web front end servers in the farm.

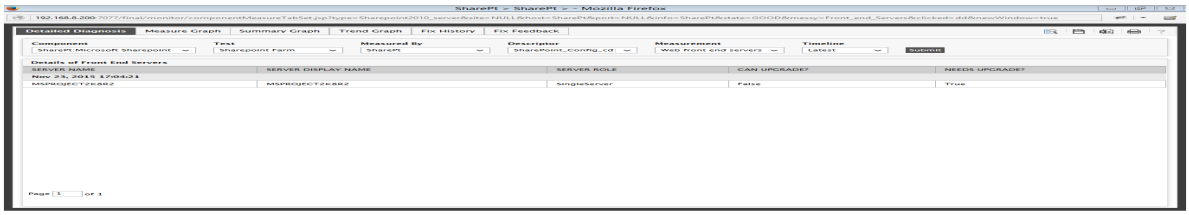


Figure 6.26: The detailed diagnosis of the Web Front end servers

To know which are the application servers in the farm, use the detailed diagnosis of the Application servers measure.

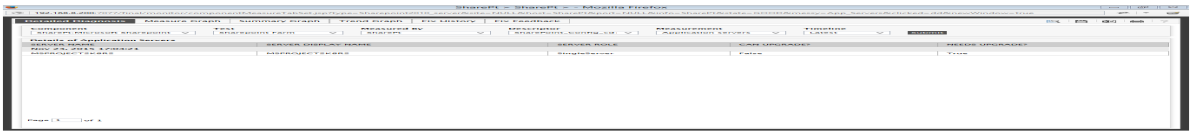


Figure 6.27: The detailed diagnosis of the Application servers measure

To identify the database servers in the farm, use the detailed diagnosis of the Database servers measure.

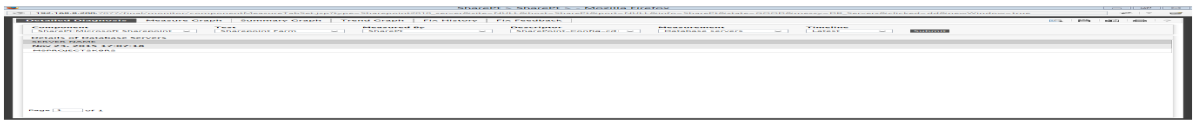


Figure 6.28: The detailed diagnosis of the Database servers measure

Use the detailed diagnosis of the *Online service instances* measure to know which services are online and which servers they are running on.

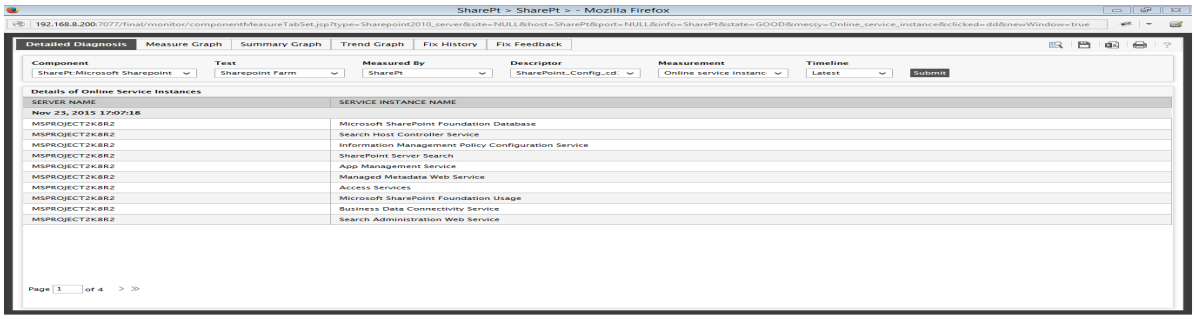


Figure 6.29: The detailed diagnosis of the Online service instances measure

Use the detailed diagnosis of the Disabled service instances measure to know which services are disabled and which servers they are running on.

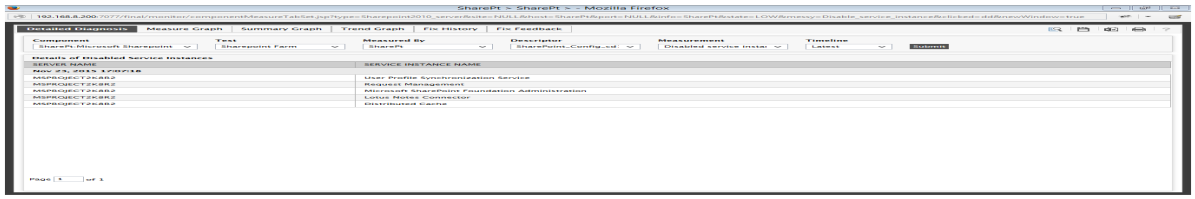


Figure 6.30: The detailed diagnosis of the Disabled service instances measure

6.5.3 SharePoint Site Collections and Sites Test

A site collection is made up of one top-level site and all sites below it. As shown in the following figure, it is the top level of organization in a SharePoint 2013 web application.

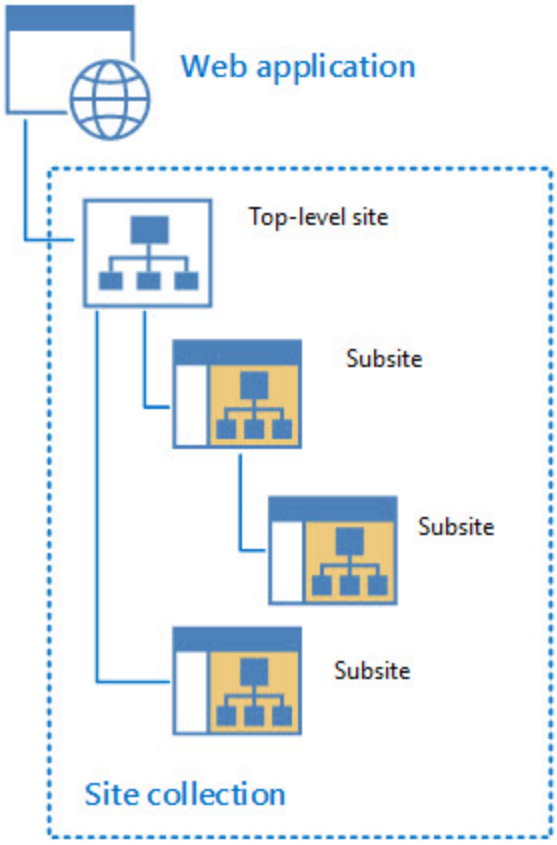


Figure 6.31: Site Collections and Sites

The number of site collections you can have in a single web application depends on the capacity of your server infrastructure.

From an architecture standpoint, all the content of a site collection must be stored in a single content database. You cannot have a site collection's content spread out across multiple content databases. Content databases scale with your infrastructure capacity so site collections can share a content database. A site collection can exist in only one content database, but one content database can host the content for multiple site collections. Similarly, any given SharePoint 2013 site can only exist in one site collection, but a site collection can host a multitude of sites. A site cannot exist outside of a site collection.

The number of site collections and sites sharing a single content database can impact the size of the database and its performance; administrators should therefore exercise restraint when associating sites and site collections with a content database. In addition, the amount of content that the sites and site collections store in their content database is also a key factor influencing the size of the content database. Variations to these two parameters – count and size - hence need to be closely

monitored, so that administrators can proactively detect abnormal growth in the size of the content databases, isolate the site collections and sites that may be contributing to this, and take measures to fine-tune the site and site collection configurations to ensure peak performance of the content databases. The **SharePoint Site Collections and Sites** test aids administrators in this endeavor!

This test captures the total number of site collections and sites on the SharePoint server / farm and reports whether/not these numbers exceed the permissible limits. In addition, the test also tracks changes in the size of the site collections and sites over time, and promptly intimates administrators if the actual size is about to reach/exceed the size quota set for the site collection. In the process, the test points you to those site collections that are growing rapidly and the sites that may be contributing to their growth. If administrators initiate measures to curb the abnormal growth in the number or the size of the site collections and sites, they can once again take the help of this test to understand which sites and site collections are the least popular, so that such sites and site collections can be marked as probable targets for deletion or trimming.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Microsoft SharePoint Server that is being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Least Active Site Collection Days	If a site collection is not modified for a duration exceeding the value (in days) specified here, then this test will count that site collection as a Least active site collection.
Least Active Site Days	If a site is not modified for a duration exceeding the value (in days) specified in the Least Active Site Days text box, then this test will count that site as a Least active site.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume

Parameters	Description
	space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	
	• The user should be part of the following groups on the eG agent host:
	
	  • Administrators
	
	  • WSS_ADMIN_WPG
	
	  • IIS_USRS
	
	  • Performance Monitor Users
	
	  • WSS_WPG
	
	  • Users
	
	To know how to add a user to one of these groups, refer to Section **4.3**.

Parameters	Description
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Site collections	Indicates the number of site collections in the SharePoint environment.	Number	The maximum recommended number of site collections per farm is: Personal Sites - 500,000, Other site templates - 250,000. The Sites can all reside on one web application, or can be distributed

Measurement	Description	Measurement Unit	Interpretation
			across multiple web applications. Note that this limit is affected by other factors that might reduce the effective number of site collections that can be supported by a given content database. Care must be exercised to avoid exceeding supported limits when a container object, such as a content database, contains a large number of other objects. For example, if a farm contains a smaller total number of content databases, each of which contains a large number of site collections, farm performance might be adversely affected long before the supported limit for the number of site collections is reached.
Total size of site collections	Indicates the total size of all site collections in the SharePoint environment.	MB	A site collection can be as large as the content database size limit for the applicable usage scenario. For more information about the different content database size limits for specific usage scenarios, see the Content database limits discussed in the Interpretation column of the Cotent database size measure of the SharePoint Content Database test. In general, Microsoft strongly recommends limiting the size of site collections to 100 GB for the following reasons: • Certain site collection actions, such

Measurement	Description	Measurement Unit	Interpretation
			as site collection backup/restore, cause large SQL Server operations which can affect performance or fail if other site collections are active in the same database. • SharePoint site collection backup and restore is only supported for a maximum site collection size of 100 GB. For larger site collections, the complete content database must be backed up. If multiple site collections larger than 100 GB are contained in a single content database, backup and restore operations can take a long time and are at risk of failure.
Site collections exceeding quota limit	Indicates the number of site collections that are of a size that is greater than the configured quota template.	Number	A Quota Template allows SharePoint administrators to specify the maximum amount of content that can be stored within a Site Collection. This way, administrators can exercise greater control on the amount of content that a site collection can store in the content database, which in turn, makes for better performance and a high quality user experience with SharePoint. A non-zero value for this measure is indicative of the fact that one/more site collections are consuming more storage resources than they should.

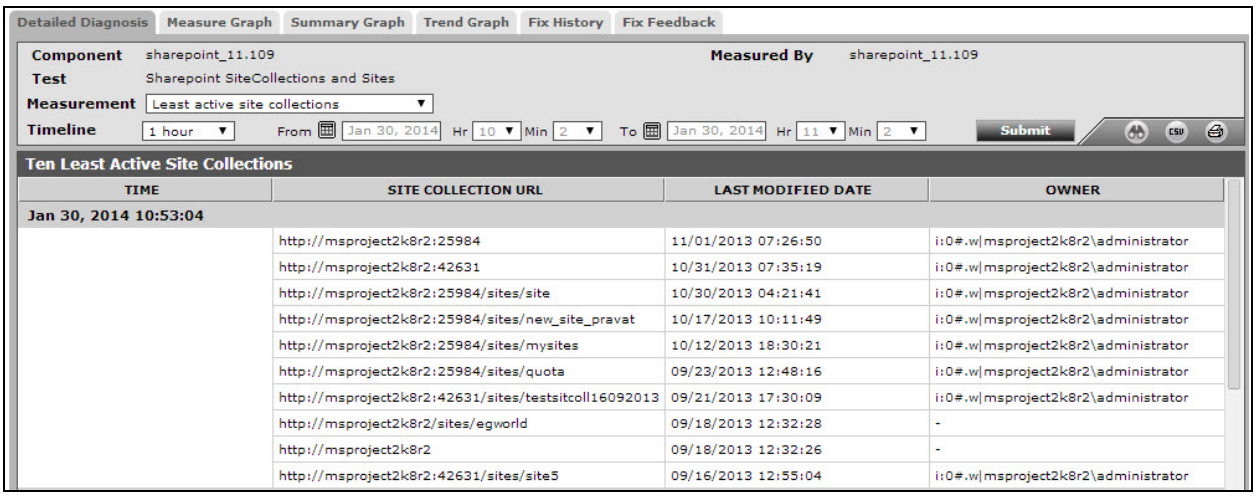
Measurement	Description	Measurement Unit	Interpretation
			The detailed diagnosis of this measure will lead you to those errant site collections, so that you can figure out which sites on those collections are violating the set storage thresholds.
Least active site collections	Indicates the number of site collections that are not frequently used.	Number	This measure reports the count of those sites that were not modified for a duration greater than the value of the least active site collection days parameter. You can use the detailed diagnosis of this measure to know which site collections are seldom used. If the value of the Site collections measure appears to be rapidly approaching the maximum recommended site collection limit, then the detailed metrics will help you identify those site collections that are rarely used and are hence candidates for removal.
Most active site collections	Indicates the number of site collections that were modified even yesterday.	Number	Use the detailed diagnosis of this measure to identify those site collections that are very actively used.
Users in site collections	Indicates the number of users in site collections.	Number	Besides storage, quota templates can also restrict the number of users who can be added to the Active Directory directory service from a single site collection. When the maximum number of users for a site collection has been reached, no additional user accounts can be

Measurement	Description	Measurement Unit	Interpretation
			added unless one or more user accounts are deleted from the site collection. It is hence good practice to keep an eye on the changes to this measure, so as to proactively detect a potential user quota violation.
Number of sites	Indicates the total number of sites in site collections.	Number	Microsoft recommends the creation of a maximum of 250,000 sites and subsites per site collection. You can create a very large total number of web sites by nesting subsites. For example, in a shallow hierarchy with 100 sites, each with 1,000 subsites, you would have a total of 100,000 web sites. Compare the value of this measure across site collections to know which collection consists of the maximum number of sites.
Total size of sites	Indicates the total size of the sites in site collections.	MB	Typically, the value of this measure will be the same as that of the Total size of site collections measure. A site collection can be as large as the content database size limit for the applicable usage scenario. For more information about the different content database size limits for specific usage scenarios, see the Content database limits discussed in the Interpretation column of the Cotent database size measure of the SharePoint Content Database test.

Measurement	Description	Measurement Unit	Interpretation
			In general, we strongly recommend limiting the size of site collections to 100 GB for the following reasons: • Certain site collection actions, such as site collection backup/restore, cause large SQL Server operations which can affect performance or fail if other site collections are active in the same database. • SharePoint site collection backup and restore is only supported for a maximum site collection size of 100 GB. For larger site collections, the complete content database must be backed up. If multiple site collections larger than 100 GB are contained in a single content database, backup and restore operations can take a long time and are at risk of failure.
Most active sites	Indicates the number of sites that were accessed even yesterday.	Number	Use the detailed diagnosis of this measure to identify those site collections that are very actively used.
Least active sites	Indicates the number of sites that are not used frequently.	Number	This measure reports the count of those sites that were not modified for a duration greater than the value of the least active site days parameter. You can use the detailed diagnosis of this measure to know sites are seldom used. If the value of the Number of sites

Measurement	Description	Measurement Unit	Interpretation
			measure appears to be rapidly approaching the maximum recommended site limit, then the detailed metrics will help you identify those sites that are rarely used and are hence candidates for removal.

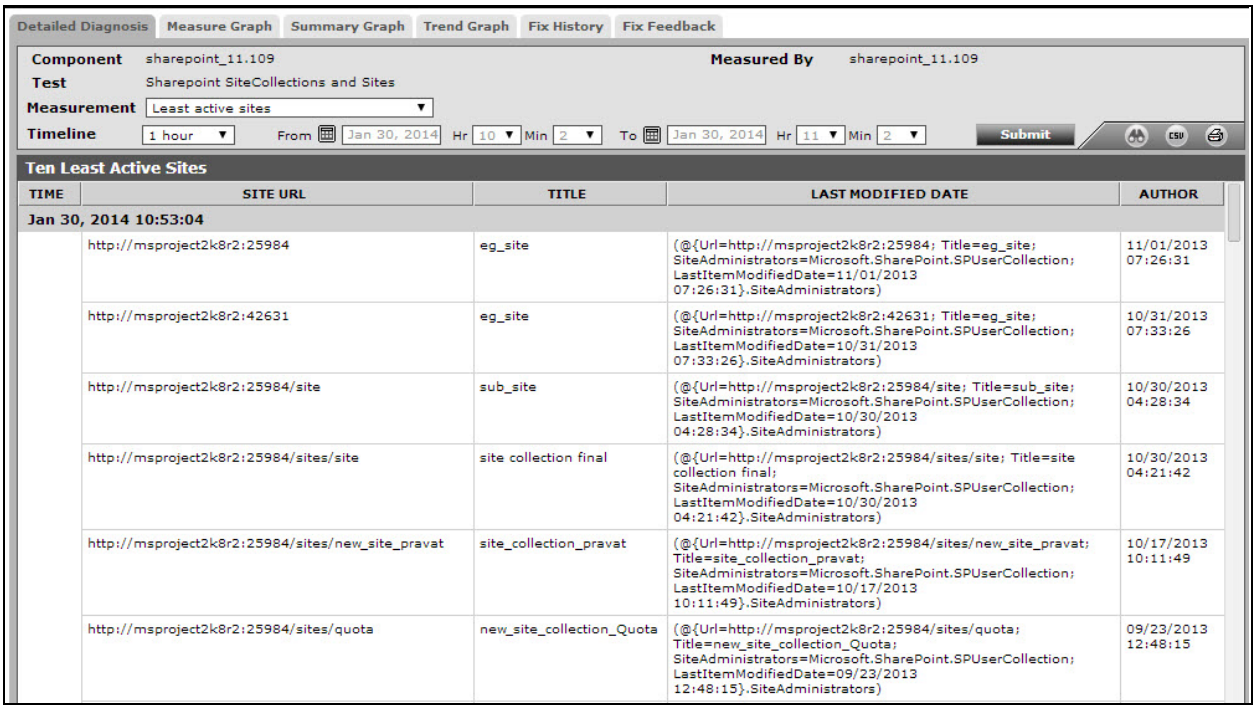
The detailed diagnosis of the *Least active site collections* measure reveals the top 10 site collections that were used the least. In times of rapid web application growth, this list will indicate those site collections that can be removed to curb the growth.



TIME	SITE COLLECTION URL	LAST MODIFIED DATE	OWNER
Jan 30, 2014 10:53:04			
	http://msproject2k8r2:25984	11/01/2013 07:26:50	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:42631	10/31/2013 07:35:19	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:25984/sites/site	10/30/2013 04:21:41	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:25984/sites/new_site_pravat	10/17/2013 10:11:49	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:25984/sites/mysites	10/12/2013 18:30:21	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:25984/sites/quota	09/23/2013 12:48:16	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2:42631/sites/testsitcoll16092013	09/21/2013 17:30:09	i:0#.w|msproject2k8r2\administrator
	http://msproject2k8r2/sites/egworld	09/18/2013 12:32:28	-
	http://msproject2k8r2	09/18/2013 12:32:26	-
	http://msproject2k8r2:42631/sites/site5	09/16/2013 12:55:04	i:0#.w|msproject2k8r2\administrator

Figure 6.32: The detailed diagnosis of the Least active site collections measure

The detailed diagnosis of the *Least active sites* measure reveals the top 10 sites that were used the least. In times of rapid growth in the size of a site collection, this list will indicate those sites that can be removed to curb the growth.



Detailed Diagnosis | Measure Graph | Summary Graph | Trend Graph | Fix History | Fix Feedback

Component: sharepoint_11.109 — Measured By: sharepoint_11.109

Test: Sharepoint SiteCollections and Sites

Measurement: Least active sites

Timeline: 1 hour — From: Jan 30, 2014 Hr: 10 Min: 2 — To: Jan 30, 2014 Hr: 11 Min: 2 — Submit

Ten Least Active Sites

TIME	SITE URL	TITLE	LAST MODIFIED DATE	AUTHOR
Jan 30, 2014 10:53:04				
	http://msproject2k8r2:25984	eg_site	(@{Url=http://msproject2k8r2:25984; Title=eg_site; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=11/01/2013 07:26:31}.SiteAdministrators)	11/01/2013 07:26:31
	http://msproject2k8r2:42631	eg_site	(@{Url=http://msproject2k8r2:42631; Title=eg_site; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=10/31/2013 07:33:26}.SiteAdministrators)	10/31/2013 07:33:26
	http://msproject2k8r2:25984/site	sub_site	(@{Url=http://msproject2k8r2:25984/site; Title=sub_site; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=10/30/2013 04:28:34}.SiteAdministrators)	10/30/2013 04:28:34
	http://msproject2k8r2:25984/sites/site	site collection final	(@{Url=http://msproject2k8r2:25984/sites/site; Title=site collection final; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=10/30/2013 04:21:42}.SiteAdministrators)	10/30/2013 04:21:42
	http://msproject2k8r2:25984/sites/new_site_pravat	site_collection_pravat	(@{Url=http://msproject2k8r2:25984/sites/new_site_pravat; Title=site_collection_pravat; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=10/17/2013 10:11:49}.SiteAdministrators)	10/17/2013 10:11:49
	http://msproject2k8r2:25984/sites/quota	new_site_collection_Quota	(@{Url=http://msproject2k8r2:25984/sites/quota; Title=new_site_collection_Quota; SiteAdministrators=Microsoft.SharePoint.SPUserCollection; LastItemModifiedDate=09/23/2013 12:48:15}.SiteAdministrators)	09/23/2013 12:48:15

Figure 6.33: The detailed diagnosis of the Least active sites measure

6.5.4 SharePoint Web Applications Test

Web Applications (WAs) are top-level containers for content in a SharePoint farm, and are typically the interface through which a user interacts with SharePoint - site collections, lists, and libraries come underneath the web application. A web application is associated with a set of access mappings or URLs which are defined in the SharePoint central management console, then automatically replicated into the IIS configuration of every server configured in the farm. WAs are typically independent of each other, have their own application pools, and can be restarted independently in Internet Information Services. Web Applications provide the ability to isolate content, processes, features and users. For example, you can separate the content anonymous users can see vs. what authenticated users can see by hosting the same content in different web apps.

A web application can grow in size over time! If this growth is not kept under control, then you may end up with a situation where a few web applications are hogging the storage resources provided by the SharePoint environment, leaving the other web applications with limited to no resources! To avoid this, administrators need to be able to quickly isolate the web applications that are growing rapidly, understand their composition, and isolate the reasons for the abnormal growth. The **SharePoint Web Applications** test helps administrators with this! For each web application deployed on a SharePoint server, this test monitors the current size of that web application and captures a consistent increase in the size of the same, thus pointing you to those web applications that are growing in size at a steady pace and the content databases they are using. In addition, the

test also leads you to the probable reasons for the abnormal size of the web application – is it because the web application is handling documents of huge sizes? or is it because the web application is storing too many versions of a document, which is in fact adding to its size? Or is it owing to the numerous sites, site collections, and document libraries that are being hosted by that web application?

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each web application on the SharePoint Server being monitored

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Least Active Site Collection Days	If a site collection is not modified for a duration exceeding the value (in days) specified here, then this test will count that site collection as a Least active site collection.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may

Parameters	Description
	however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	• The user should be part of the following groups on the eG agent host:
	  • Administrators
	  • WSS_ADMIN_WPG
	  • IIS_USRS
	  • Performance Monitor Users
	  • WSS_WPG
	  • Users
	To know how to add a user to one of these groups, refer to Section **4.3**.
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**.
	It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm

Parameters	Description
	the password, retype it in the confirm password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Size of this web application	Indicates the current size of this web application.	GB	
Web application growth rate	Indicates the percentage growth in the size of this web application since the last measurement period.	Percent	Compare the value of this measure across web applications to know which web application has grown the maximum since the previous measurement period. By closely tracking the variations in this measure for that web application over time, you can determine whether/not the web application is growing rapidly in size! If so, it is a cause for concern, as it indicates that that web application has the potential of consuming all available storage

Measurement	Description	Measurement Unit	Interpretation
			resources! In such a situation, you may want to reset the size limit for the site collections that are within the web application, so as to curb its growth. A site collection can be as large as the content database size limit for the applicable usage scenario. For more information about the different content database size limits for specific usage scenarios, see the Content database limits discussed in the Interpretation column of the Cotent database size measure of the SharePoint Content Database test. In general, Microsoft strongly recommends limiting the size of site collections to 100 GB for the following reasons: • Certain site collection actions, such as site collection backup/restore, cause large SQL Server operations which can affect performance or fail if other site collections are active in the same database. • SharePoint site collection backup and restore is only supported for a maximum site collection size of 100 GB. For larger site collections, the complete content database must be backed up. If multiple site

Measurement	Description	Measurement Unit	Interpretation
			collections larger than 100 GB are contained in a single content database, backup and restore operations can take a long time and are at risk of failure.
Users in this web application	Indicates the number of users in this web application.	Number	Compare the value of this measure across web applications to identify that application which has the maximum number of users.
Content databases used by this web application	Indicates the number of content databases that were used by this web application.	Number	
Site collections part of this web application	Indicates the number of site collections in this web application.	Number	The maximum recommended number of site collections per farm is: Personal Sites - 500,000, Other site templates - 250,000. The Sites can all reside on one web application, or can be distributed across multiple web applications. Compare the value of this measure across web applications to know which application consists of the maximum number of site collections. In the event of a sudden increase in the size of a web application, you can check how the value of this measure has grown over the same period to figure out whether/not the addition of site collections has anything to do with the increase in web application size.

Measurement	Description	Measurement Unit	Interpretation
Sites part of this web application	Indicates the total number of sites in the site collections that are part of this web application.	Number	Microsoft recommends the creation of a maximum of 250,000 sites and subsites per site collection. You can create a very large total number of web sites by nesting subsites. For example, in a shallow hierarchy with 100 sites, each with 1,000 subsites, you would have a total of 100,000 web sites. Compare the value of this measure across web applications to know which application consists of the maximum number of sites. In the event of a sudden increase in the size of a web application, you can check how the value of this measure has grown over the same period to figure out whether/not the addition of sites has anything to do with the increase in web application size.
Number of document libraries	Indicates the number of document libraries in this web application.	Number	Document libraries are collections of files that you can share with team members on a Web based on Microsoft Windows SharePoint Services. By comparing the value of this measure across web applications, you can figure out which web application has the maximum number of document libraries. In the event of a sudden increase in the size of a web application, you can check how the value of this

Measurement	Description	Measurement Unit	Interpretation
			measure has grown over the same period to figure out whether/not the addition of document libraries has anything to do with the increase in web application size.
Lists in this web application	Indicates the number of lists in this web application.	Number	A list in SharePoint is used to store data across columns in separate rows. By comparing the value of this measure across web applications, you can figure out which web application has the maximum number of SharePoint lists. In the event of a sudden increase in the size of a web application, you can check how the value of this measure has grown over the same period to figure out whether/not the addition of lists has in any way impacted the web application size.
Attachments	Indicates the number of attachments in this web application.	Number	By comparing the value of this measure across web applications, you can figure out which web application has the maximum number of attachments. In the event of a sudden increase in the size of a web application, you can check how the value of this measure has grown over the same period to figure out whether/not the addition of attachments has in any way impacted the web application size.
Documents in this web application	Indicates the total number of documents in	Number	By comparing the value of this

Measurement	Description	Measurement Unit	Interpretation
	this web application.		measure across web applications, you can figure out which web application has the maximum number of documents. In the event of a sudden increase in the size of a web application, you can check how the value of this measure has grown over the same period to figure out whether/not the addition of documents has in any way impacted the web application size.
Size of documents	Indicates the total size of all documents that are available in this web application.	GB	Compare the value of this measure across web applications to identify that application with the maximum document size. This can be attributed to the existence of one/more large- sized documents or many moderately sized documents in the web application. If that web application appears to be growing in size rapidly, you may want to keep an eye on this measure to figure out if it is owing to the increase in document size.
Document versions	Indicates the number of document versions in this web application.	Number	Typically, SharePoint can support a maximum of 40,000 major versions and 511 minor versions of documents. If this limit is exceeded basic file operations—such as file open or save, delete, and viewing the version history— may not succeed.
Average number of documents per document library	Indicates the average number of documents per library in this web application.	Number	

6.5.5 SharePoint Web Parts Test

By using web parts, you can modify the content, appearance, and behavior of pages of a SharePoint site by using a browser. Web parts are server-side controls that run inside a web part page: they're the building blocks of pages that appear on a SharePoint site.

For problem detection and troubleshooting purposes, administrators should know which web parts operate within a web application, which ones are open presently, and which ones are closed. The **SharePoint Web Parts** test provides this insight to the administrators. For each web application on SharePoint, this test reports the count of web parts in that web application, and the number of open and closed web parts in that web application. Detailed diagnosis of this test also reveals the names of the open and closed web parts.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each web application in the SharePoint server

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**.

Parameters	Description
	Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	• The user should be part of the following groups on the eG agent host:
	  • Administrators
	  • WSS_ADMIN_WPG
	  • IIS_USRS
	  • Performance Monitor Users
	  • WSS_WPG
	  • Users
	To know how to add a user to one of these groups, refer to Section **4.3**.
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**.
	It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain

Parameters	Description
	to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total web parts	Indicates the number of web parts in this web application.	Number	
Open web parts	Indicates the number of open web parts in this web application.	Number	Use the detailed diagnosis of this measure to view the top-10 URLs with the most number of open web parts. From this, you can quickly identify the URL with the maximum number of open web parts.
Closed web parts	Indicates the number of closed web parts in this web application.	Number	Use the detailed diagnosis of this measure to determine which web parts are closed in the target web application.

Use the detailed diagnosis of the Open web parts measure to view the top-10 URLs with the most number of open web parts. From this, you can quickly identify the URL with the maximum number of open web parts.

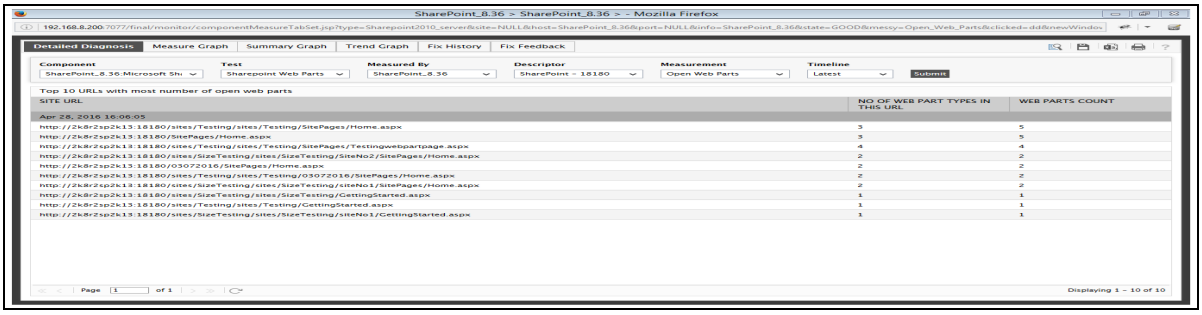


Figure 6.34: The detailed diagnosis of the Open web parts measure

Use the detailed diagnosis of the Closed web parts measure to determine which web parts are closed in the target web application.

Figure 6.35: The detailed diagnosis of the Closed web parts measure

6.6 The SharePoint Usage Analytics Layer

The tests mapped to this layer report a wide variety of usage analytics that measure the experience of users of web sites, web applications, browsers, distributed cache, and web parts on SharePoint, and reports abnormalities.

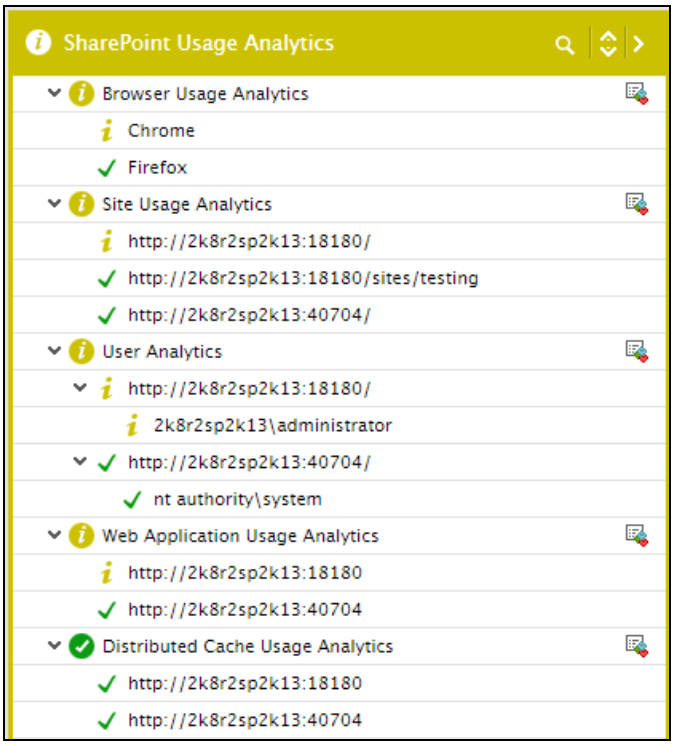


Figure 6.36: The tests mapped to the SharePoint Usage Analytics layer

6.6.1 Site Usage Analytics Test

Enterprises typically use SharePoint to create web sites and web applications. The success of the SharePoint platform therefore hinges on how happy users are when interacting with the web sites that it helped create. If the number of visitors to a web site keeps increasing, it is indicative of an increase in the web site's popularity, which directly translates into 'many happy users'! Likewise, if users to a web site constantly complain of slowness when browsing that web site, it indicates that user experience with the web site is unsatisfactory – meaning, 'many unhappy users'. This in turn can hit user productivity badly, escalate troubleshooting time and costs of the enterprise, and adversely impact its revenues and reputation! To improve user experience with SharePoint sites and to build user confidence in the SharePoint platform, administrators should be able to quickly identify slow web sites and precisely pinpoint the reason for the slowness.

This is where the **Site Usage Analytics** test helps! This test queries the SharePoint usage database at configured intervals and collects metrics on web site usage that is stored therein – this includes the web sites accessed, count of hits to each web site, users who browsed every site, the browsers that were used for web site access, web pages requested, the time taken for the requested pages to load, where page views spent time and how much, error responses returned,

resources consumed, and many more. For each web site configured for monitoring, the test then reports the average time taken by that site to load pages. In the process, the test points administrators to slow web sites and also leads them to the probable source of the slowness – is it owing to a latent web front end? is it because of slow service calls? Or is it due to inefficient queries to the backend database?

Sometimes, poor user experience can be attributed to HTTP errors. This is why, this test instantly alerts administrators to HTTP error responses, thus ensuring their timely intervention and rapid resolution of the error conditions.

This way, the **Site Usage Analytics** test enables administrators to detect web site slowness well before users notice, helps them promptly and accurately diagnose the source of the poor user experience with a web site, and thus ensures that they initiate measures to enhance user experience and pre-empt the damage that may be caused to revenue and reputation.

Note:

This test will run only if a SharePoint Usage and Health Service application is created and is configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.

Target of the test : A Microsoft SharePoint Server 2010/2013

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each Site configured for monitoring

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the SQL server that hosts the usage database.
Instance	If the SQL server that hosts the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.

Parameters	Description
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM is a suite of Microsoft security protocols that provides authentication, integrity, and confidentiality to users. NTLM version 2 ("NTLMv2") was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server that hosts the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database server Name	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test.
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the usage database configured, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
Site	Configure a comma-separated list of web site URLs that you want this test to monitor. For eg., *http://www.msproject28rk2:11982,http://www.mydocs.com*
Slow Transaction Cutoff (ms)	This test reports the count of slow page views and also pinpoints the pages that are slow. To determine whether/not a page is slow, this test uses the Slow Transaction Cutoff parameter. By default, this parameter is set to *4000* millisecs (i.e., 4 seconds). This means that, if a page takes more than 4 seconds to load, this test will consider that page as a *slow page* by default. You can increase or decrease this Slow Transaction Cutoff according to what is '*slow*' and what is '*normal*' in your environment. **Note:** The default value of this parameter is the same as the default **Maximum threshold** setting of the *Avg page load time* measure – i.e., both are set to *4000 millisecs* by default. While the former helps eG to distinguish between slow and healthy page views for the purpose of providing detailed diagnosis, the latter tells eG when to generate an alarm on *Avg page load time*. For best results, it is recommended that both these settings are configured with the same value at all times. Therefore, if you change the value of one of these configurations, then

Parameters	Description
	make sure you update the value of the other as well. For instance, if the Slow Transaction Cutoff is changed to *6000 millisecs*, change the **Maximum Threshold** of the *Avg page load time* measure to *6000 millisecs* as well.
URL patterns to be ignored from monitoring	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll**,***.gif,*.bmp**
Ignore AjaxDelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore AjaxDelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain	When monitoring a SharePoint 2010 server, this test has to be configured with

Parameters	Description

User, Password, and Confirm Password	the credentials of a domain user with the following privileges:
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	• The user should be part of the following groups on the eG agent host:
	  • Administrators
	  • WSS_ADMIN_WPG
	  • IIS_USRS
	  • Performance Monitor Users
	  • WSS_WPG
	  • Users
	To know how to add a user to one of these groups, refer to Section **4.3**.
	• The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**.
	• The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**.
	It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.

DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so

Parameters	Description
	by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Unique users	Indicates the number of unique users of this web site.	Number	The detailed diagnosis of this measure reveals the names of the unique users and the number of requests from each user to the web site being monitored. From this, you can identify those users who are actively using the web site.
Unique visitors	Indicates the number of unique visitors to this web site.	Number	SharePoint authenticated users and anonymous users (using IP address) are counted as visitors. Compare the value of this measure across sites to identify the most popular SharePoint site. You can use the detailed diagnosis of this measure to know who are the unique visitors to the web site and the

Measurement	Description	Measurement Unit	Interpretation
			number of requests from each visitor to the web site. This way, you can identify that visitor who visits the web site most frequently.
Unique destinations	Indicates the number of unique destinations of this site.	Number	To know the most popular destination URLs of this site, use the detailed diagnosis of this measure. Here, you will find the top-10 destinations in terms of the number of hits.
Unique browsers	Indicates the number of unique browsers used for accessing this site.	Number	To know which browsers are commonly used to access this web site, use the detailed diagnosis of this measure. Here, the unique browsers will be listed and the number of hits to the web site from each browser will be displayed alongside, so that you can instantly identify that browser that has been widely used to access the web site.
Unique referrers	Indicates the number of unique URLs external to this site (parent site is treated as external as well), from where the users navigated to this site.	Number	To know which referrer URL was responsible for the maximum hits to this web site, use the detailed diagnosis of this measure. The top-10 unique referrer URLs in terms of the number of hits they generated will be displayed as part of the detailed diagnostics.
Apdex score	Indicates the Apdex score of this site.	Number	Apdex (Application Performance Index) is an open standard developed by an alliance of companies. It defines a standard method for reporting and comparing the performance of software applications in computing. Its

Measurement	Description	Measurement Unit	Interpretation
			purpose is to convert measurements into insights about user satisfaction, by specifying a uniform way to analyze and report on the degree to which measured performance meets user expectations. The Apdex method converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied). The resulting Apdex score is a numerical measure of user satisfaction with the performance of enterprise applications. This metric can be used to report on any source of end-user performance measurements for which a performance objective has been defined. The Apdex formula is: Apdext = (Satisfied Count + Tolerating Count / 2) / Total Samples This is nothing but the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples. A score of 1.0 means all responses were satisfactory. A score of 0.0 means none of the responses were satisfactory. Tolerating responses half satisfy a user. For example, if all responses are tolerating, then the Apdex score would be 0.50.

Measurement	Description	Measurement Unit	Interpretation
			Ideally therefore, the value of this measure should be 1.0. A value less than 1.0 indicates that the user experience with the web site has been less than satisfactory.
Total page views	Indicates the number of times the pages in this web site were viewed by users.	Number	This is a good measure of the traffic to your web site, and also reveals how popular your web site is. An unusually high number of page views could be a cause for concern, as it could be owing to a malicious virus attack or an unscrupulous attempt to hack your web site. Either way, be wary of sudden, but significant spikes in the page view count!
Satisfied page views	Indicates the number of times pages in this web site were viewed without any slowness.	Number	A page view is considered to be slow when the average time taken to load that page exceeds the slow transaction cutoff configured for this test. If this slow transaction cutoff is not exceeded, then the page view is deemed to be 'satisfactory'. Ideally, the value of this measure should be high. If the value of this measure is much lesser than the value of the Tolerating page views and the Frustrated page views, it is a clear indicator that the experience of the users of this web site is below-par. In such a case, use the detailed diagnosis of the Tolerating page views and Frustrated page views measures to know which

Measurement	Description	Measurement Unit	Interpretation
			pages are slow.
Tolerating page views	Indicates the number of tolerating page views to this web site.	Number	If the *Average page load time* of a page exceeds the slow transaction cutoff configuration of this test, but is less than 4 times the slow transaction cutoff (i.e., < 4 * slow transaction cutoff), then such a page view is considered to be a Tolerating page view. Ideally, the value of this measure should be 0. A value higher than that of the Satisfied page views measure is a cause for concern, as it implies that the overall user experience from this browser is less than satisfactory. To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Frustrated page views	Indicates the number of frustrated page views to this web site.	Number	If the *Average page load time* of a page is over 4 times the slow transaction cutoff configuration of this test (i.e., > 4 * slow transaction cutoff), then such a page view is considered to be a Frustrated page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the experience of users using this browser has been less than satisfactory. To know which pages are contributing to this sub- par

Measurement	Description	Measurement Unit	Interpretation
			experience, use the detailed diagnosis of this measure.
Average page load time	Indicates the average time taken by the pages in this web site to load completely.	Secs	This is the average interval between the time that a user initiates a request and the completion of the page load of the response in the user's browser. If the value of this measure is consistently high for a web site, there is reason to worry. This is because, it implies that the web site is slow in responding to requests. If this condition is allowed to persist, it can adversely impact user experience with the web site. You may want to check the Apdex score in such circumstances to determine whether/not user experience has already been affected. Regardless, you should investigate the anomaly and quickly determine where the bottleneck lies – is it with the web front-end? is it owing to slow service calls? Or is it because of inefficient queries to the backend? - so that the problem can be fixed before users even notice any slowness! For that, you may want to compare the values of the *Average service calls duration, Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test.
Average service calls duration	Indicates the time taken by this web site to generate service calls.	Secs	If the Avg page load time of a web site is abnormally high, then you can compare the value of this measure

Measurement	Description	Measurement Unit	Interpretation
			with that of the Web front- end processing time, Average CPU duration, Average IIS latency, and Average query duration measures of this test to know what exactly is delaying page loading – a slow front-end web server? inefficient queries to the backend database? or slow service calls?
Average IIS latency	Indicates the average time requests to this web site took in the frontend web server after the requests were received by the frontend web server but before this web site began processing the requests.	Secs	If the Avg page load time of a web site is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average CPU duration*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front-end web server? inefficient queries to the backend database? or slow service calls?
Average CPU duration	Indicates the average time for which requests to this web site used the CPU.	Secs	If the *Avg page load time* of a web site is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front-end web server? inefficient queries to the backend database? or slow service calls?
SQL logical reads	Indicates the total number of 8 kilobyte blocks that this web site	Number	

Measurement	Description	Measurement Unit	Interpretation
	read from storage on the back-end database server.		
Average CPU megacycles	Indicates the average number of CPU mega cycles spent processing the requests to this web site in the client application on the front end web server.	Number	
Total queries	Indicates the total number of database queries generated for this site.	Number	
Average query duration	Indicates the average time taken for all backend database queries generated for this site.	Secs	If the *Avg page load time* of a web site is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency*, and *Average CPU duration* measures of this test to know what exactly is delaying page loading – a slow front-end web server? inefficient queries to the backend database? or slow service calls?
Average data consumed	Indicates the average bytes of data downloaded by requests to this web site.	KB	
GET requests	Indicates the number of GET requests to this web site.	Number	

Measurement	Description	Measurement Unit	Interpretation
POST requests	Indicates the number of POST requests to this web site.	Number	
OPTION requests	Indicates the number of OPTION request to this web site.	Number	
300 responses	Indicates the number of responses to requests to this web site with a status code in the 300-399 range	Number	300 responses could indicate page caching on the client browsers. Alternatively 300 responses could also indicate redirection of requests. A sudden change in this value could indicate a problem condition.
400 errors	Indicates the number responses to requests to this web site that had a status code in the range 400-499.	Number	A high value indicates a number of missing/error pages. Use the detailed diagnosis of this measure to know when each of the 400 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.
500 errors	Indicates the number of responses to the requests to this web site that had a status code in the range 500-599.	Number	Since responses with a status code of 500- 600 indicate server side processing errors, a high value reflects an error condition. Use the detailed diagnosis of this measure to know when each of the 500 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.

The detailed diagnosis of the *Unique users* measure reveals the names of the unique users and the number of requests from each user to the web site being monitored. From this, you can identify those users who are actively using the web site.

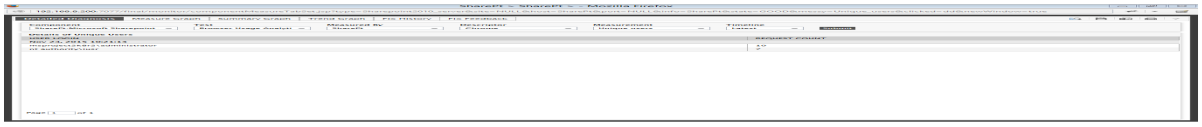


Figure 6.37: The detailed diagnosis of the Unique users measure

You can use the detailed diagnosis of the *Unique visitors* measure to know who are the unique visitors to the web site and the number of requests from each visitor to the web site. This way, you can identify that visitor who visits the web site most frequently.

Figure 6.38: The detailed diagnosis of the Unique visitors measure

To know the most popular destination URLs of this site, use the detailed diagnosis of the *Unique destinations* measure. Here, you will find the top-10 destinations in terms of the number of hits.

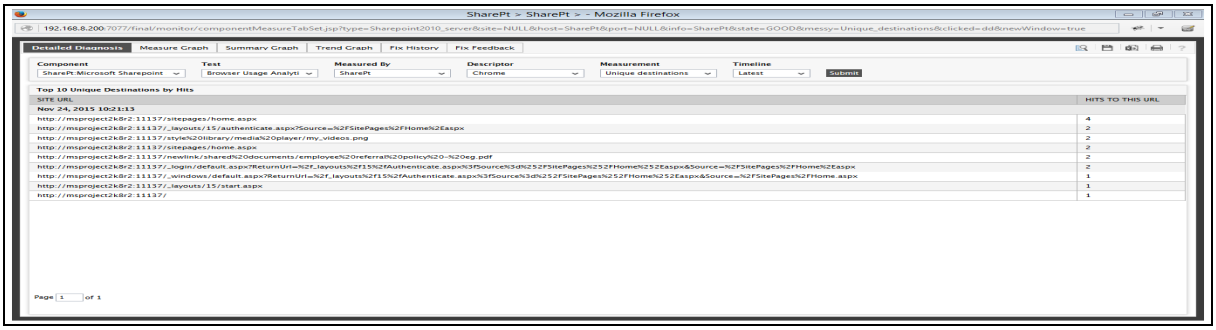


Figure 6.39: Figure 18.54: The detailed diagnosis of the Unique destinations measure

To know which referrer URL was responsible for the maximum hits to this web site, use the detailed diagnosis of the *Unique referrers* measure. The top-10 unique referrer URLs in terms of the number of hits they generated will be displayed as part of the detailed diagnostics.

Figure 6.40: The detailed diagnosis of the Unique referrers measure

If the *Tolerating page views* measure reports a non-zero value, then use the detailed diagnosis of this measure to view the top-10 pages in terms of page load time. From the detailed metrics, you can rapidly identify the URL of the page that took the longest to load, the load time of that page, when the slowness occurred, and which user's access was impacted by the slowness. Additionally, usage analytics such as the count of requests to the slow page, the count of queries run by the page, the amount of data consumed, and the status of the HTTP access to the page are also revealed as part of the detailed diagnosis.

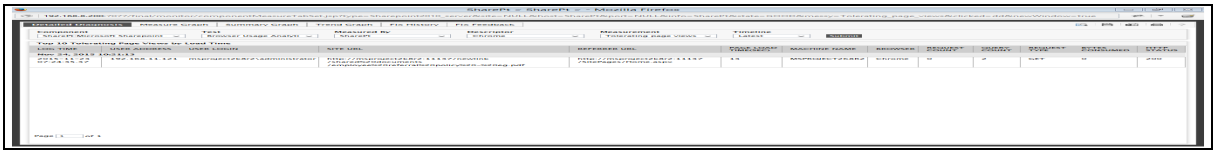


Figure 6.41: The detailed diagnosis of the Tolerating page views measure

If the *Frustrated page views* measure reports a non-zero value, then use the detailed diagnosis of this measure to view the top-10 pages in terms of page load time. From the detailed metrics, you can rapidly identify the URL of the page that took the longest to load, the load time of that page, when the slowness occurred, and which user's access was impacted by the slowness. Additionally, usage analytics such as the count of requests to the slow page, the count of queries run by the page, the amount of data consumed, and the status of the HTTP access to the page are also revealed as part of the detailed diagnosis.

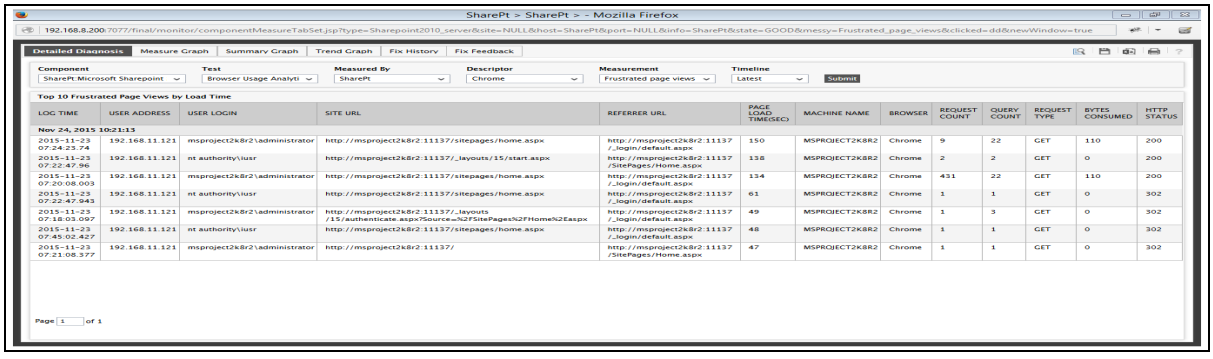


Figure 6.42: The detailed diagnosis of the Frustrated page views measure

Use the detailed diagnosis of the *400 errors and 500 errors* measures to know when each of the 400 or 500 errors (as the case may be) occurred, which user experienced the error, when, using what browser, from which machine. This information will greatly aid troubleshooting.

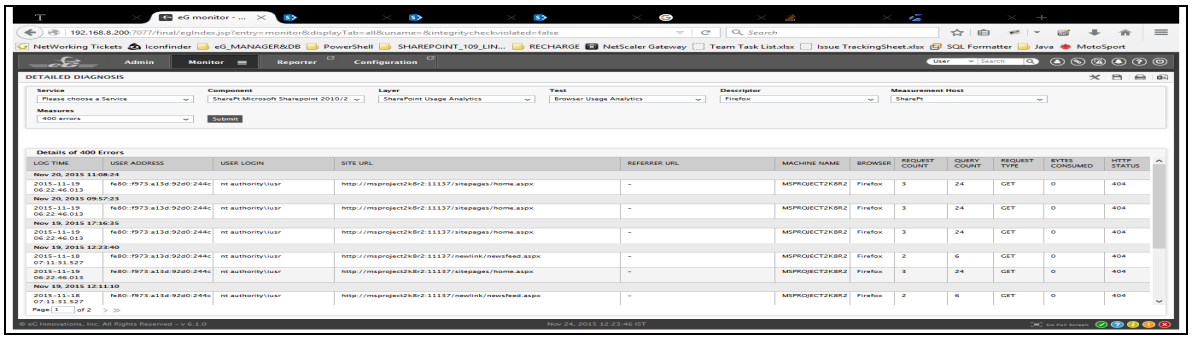


Figure 6.43: The detailed diagnosis of the 400 errors measure

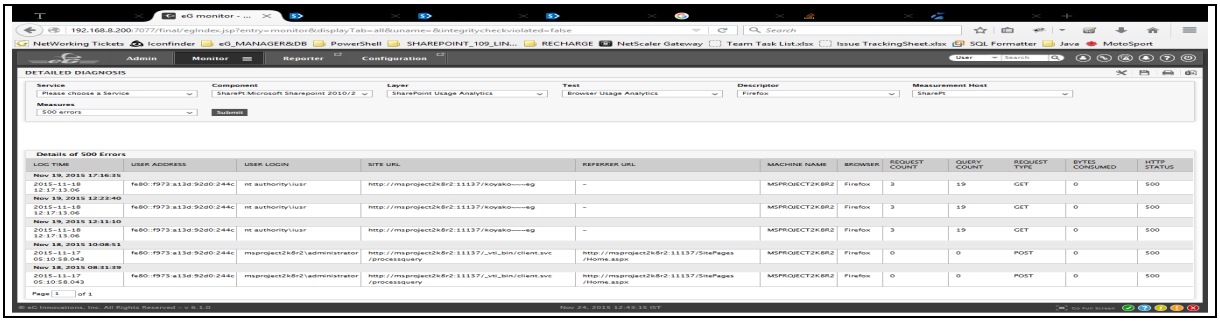


Figure 6.44: The detailed diagnosis of the 500 errors measure

6.6.1.1 Configuring the eG Agent to Collect Usage Analytics

SharePoint Usage and Health Service application is a feature to analyze usage of SharePoint environment or troubleshooting SharePoint Issues. This application can be configured to collect two types of data: **Usage data** and **Health data**. The following tests use the **Usage data** collected by the application to report metrics:

- Site Usage Analytics test
- Web Application Usage Analytics test
- Browser Usage Analytics test
- User Analytics test
- Distributed Cache Usage Analytics test

Usage data is about usage on SharePoint Farm, like page requests, feature use, search query latency, etc. This data is similar to IIS log, however unlike IIS logs this has additional SharePoint specific data collected like Application ID, Site ID, Web ID, Correlation ID etc. Usage data is initially

stored in Usage Log file (.USAGE) on SharePoint Server under logging directory which is later processed by Microsoft SharePoint Foundation Usage Data Import Timer job into **Usage Database**. Each of the tests above query the **Usage Database** at configured intervals to collect the metrics they require.

For these tests to run, the following pre-requisites should be fulfilled:

- A **SharePoint Usage and Health Service Application** should be created on the target SharePoint server;
- Usage and Health data collection should be enabled for this application
- The eG agent on the SharePoint server should be allowed to query the Usage database.

Each of these steps are detailed below.

6.6.1.1.1 Creating a SharePoint Usage and Health Service Application

For this, do the following:

1. Login to the target SharePoint server as a user with **Farm administrator** privileges.
2. Open the SharePoint management shell.
3. Then, run the following commands one after another:

```
Add-PSSnapin Microsoft.SharePoint.PowerShell
```

```
New-SPUsageApplication -Name "<Name_of_application>"
```

For example, your command can be:

```
Add-PSSnapin Microsoft.SharePoint.PowerShell
```

```
New-SPUsageApplication -Name "SharePointUsageApp"
```

If the command executes successfully, then your output will reveal the name of the application you created, the application type, and the application ID.

Figure 6.45: Output of the command issued for creating a SharePoint Usage and Health application

4. Next, open the SharePoint management console and follow the node sequence, Central Administration -> Application Management -> Manage service applications, on the console. Figure 6.46 will then appear. Click the **Manage service applications** option under **Service Applications** in Figure 6.46.

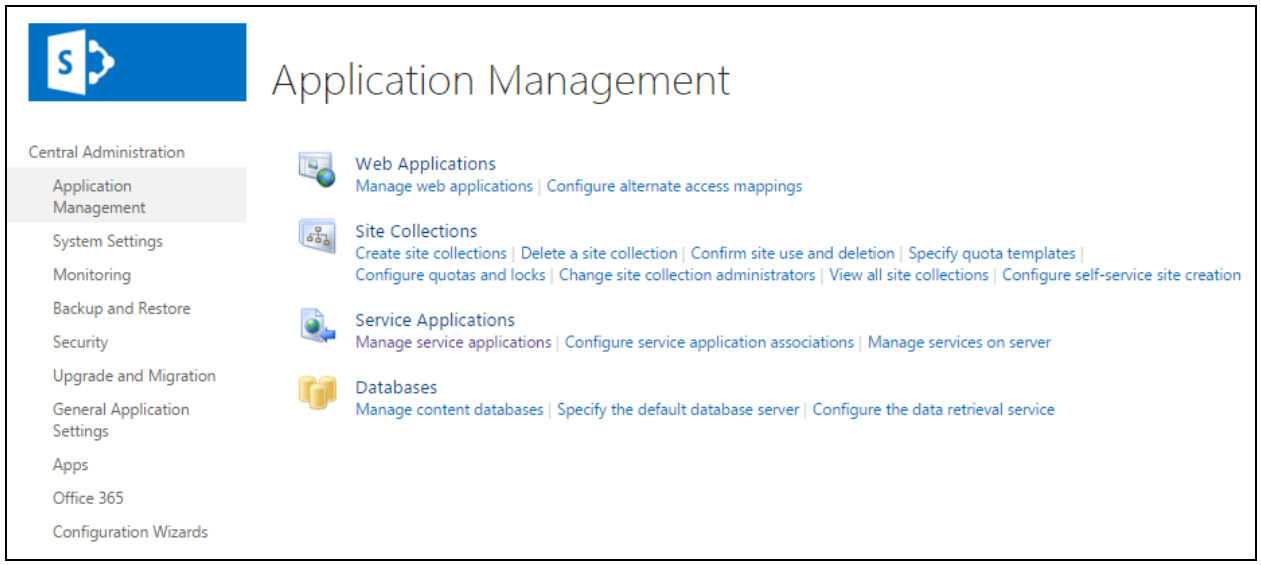


Figure 6.46: Selecting the Manage service applications option

5. When Figure 6.47 appears, look for an entry for the new Usage and Health application you created at step 3 above. If its available therein, it is a clear indicator that the new application has been created successfully.

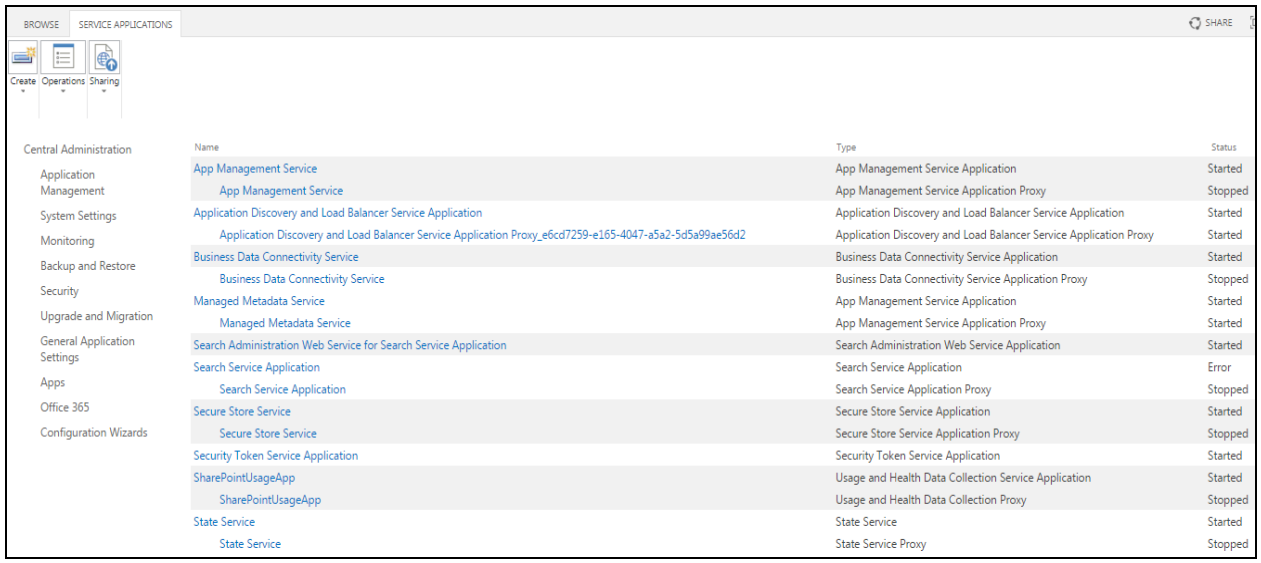


Figure 6.47: Looking for an entry for the new Usage and Health application you created

6.6.1.1.2 Enabling Usage and Health Data Collection

To achieve this, follow the steps below:

1. In the SharePoint management console, select the **Monitoring** node under **Central Administration.** Then, click on the **Configure usage and health data collection** option under **Reporting** (see Figure 6.48).

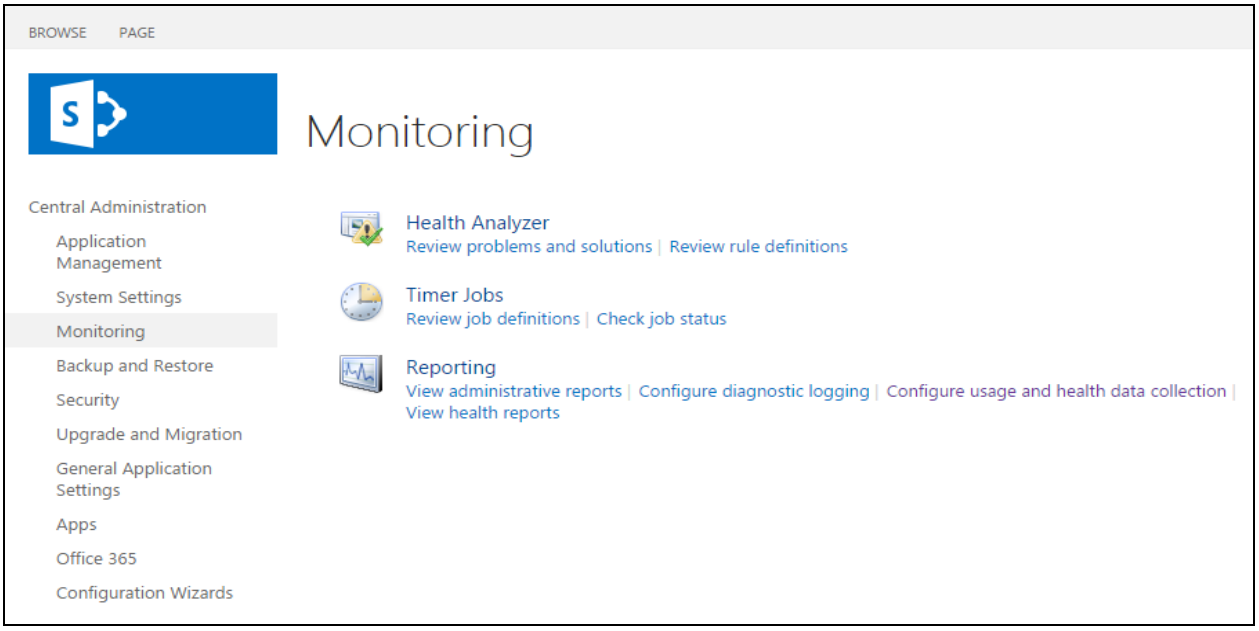


Figure 6.48: Selecting the Configure usage and health data collection option

2. When Figure 6.49 appears, select the Enable usage data collection checkbox therein.

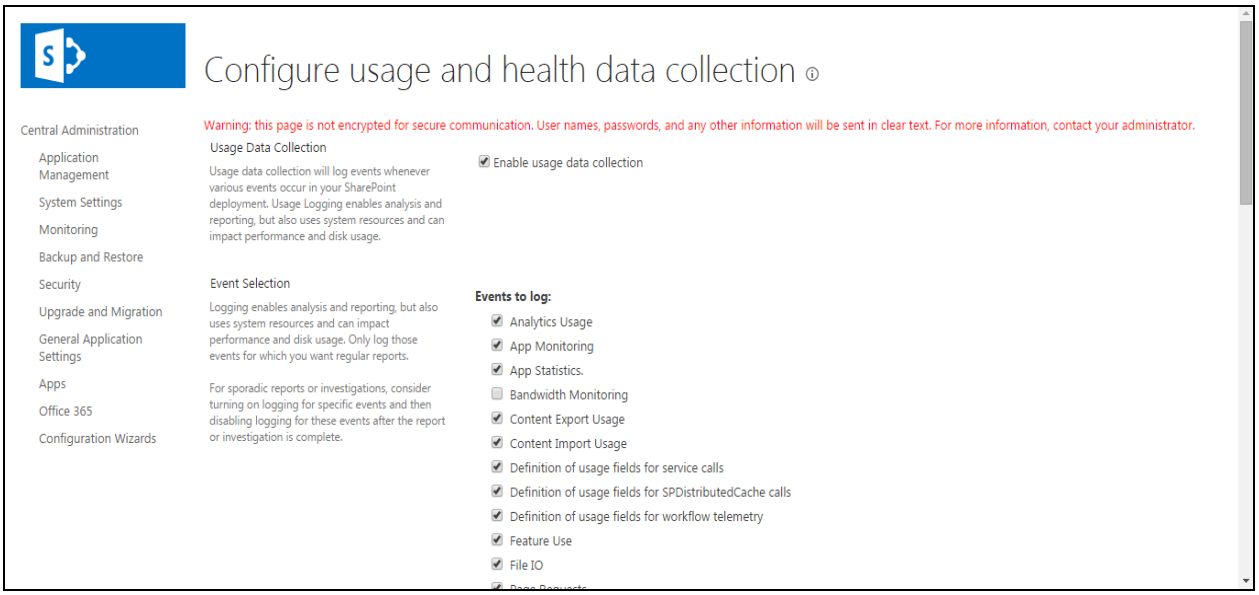


Figure 6.49: Enabling usage data collection

3. Under the **Events to log** section, make sure that the default selections (indicated by Figure 6.50 and Figure 6.51) are not disturbed.

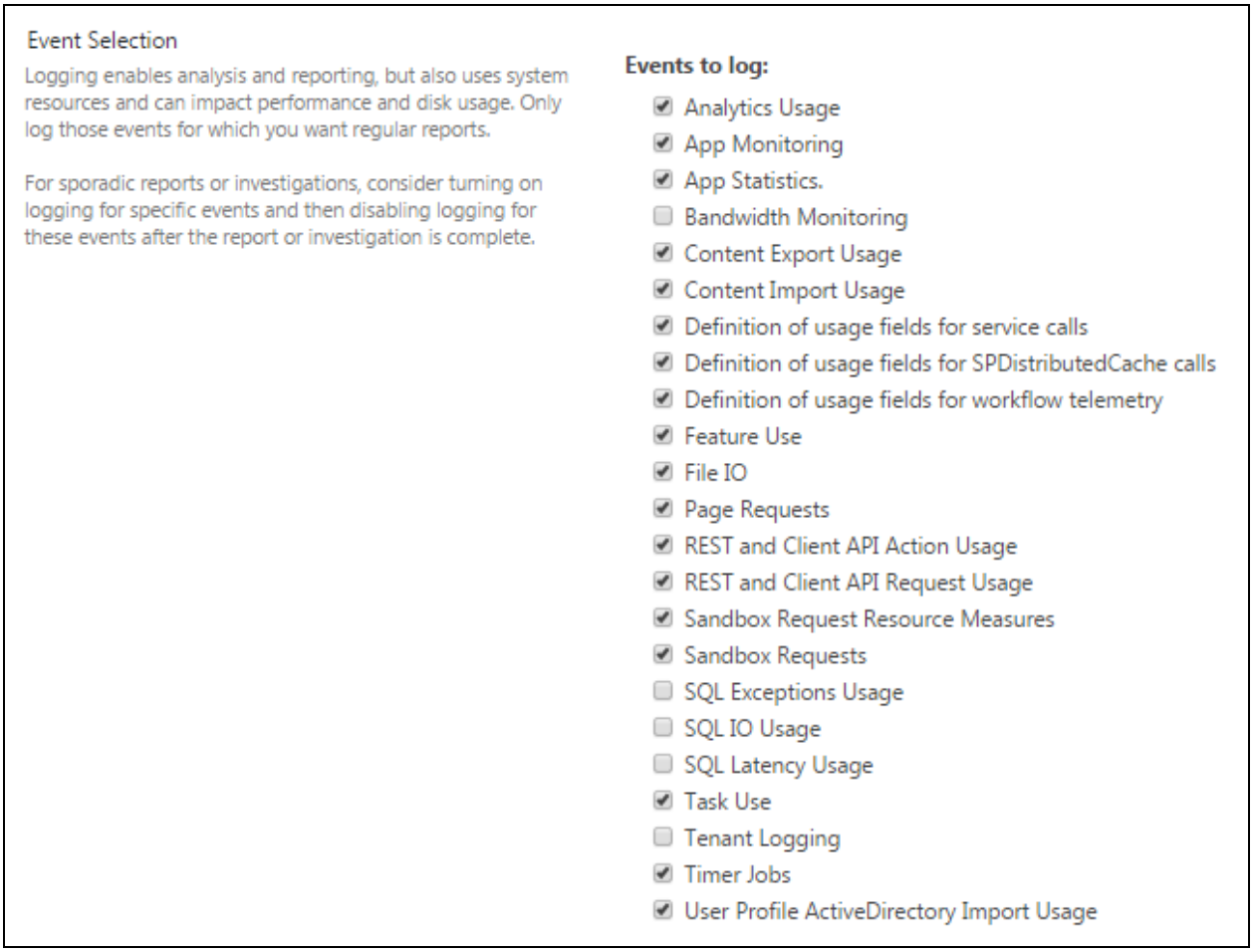


Figure 6.50: Retaining the default events to be logged

4. Scroll down Figure 18.13 and then select the **Enable health data collection** check box that becomes visible.

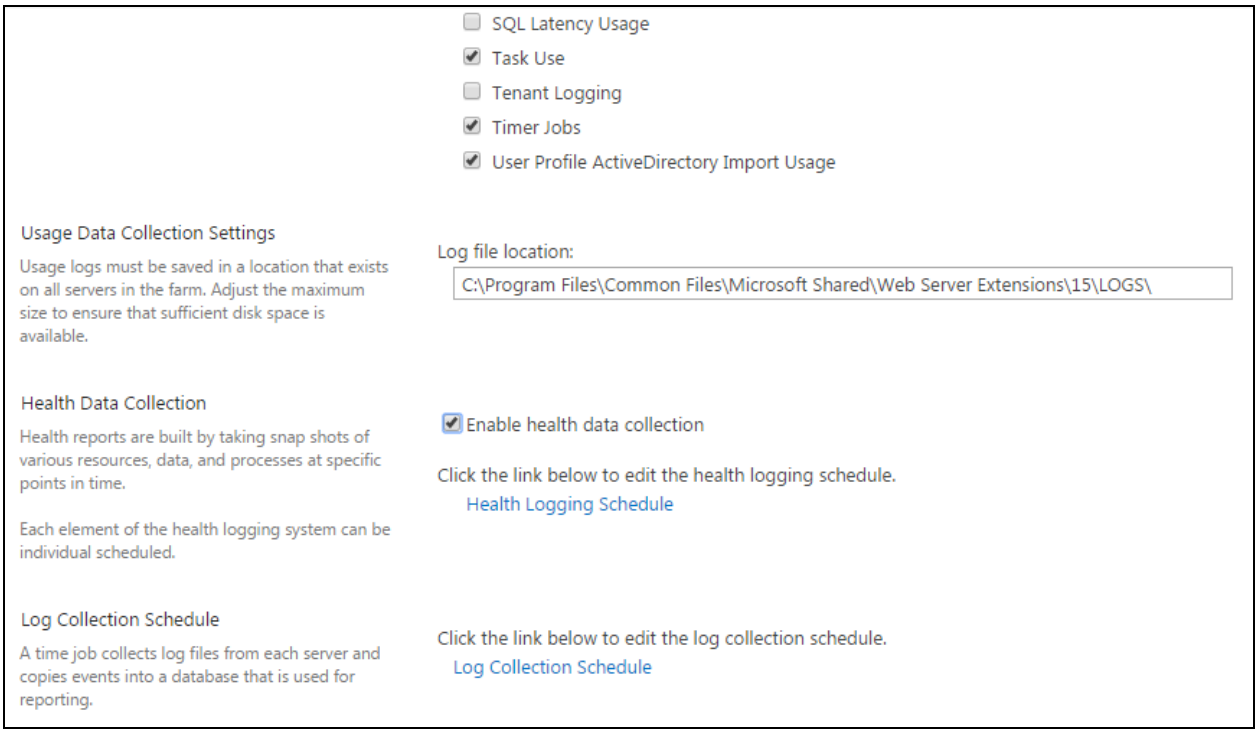


Figure 6.51: Enabling health data collection

5. Scroll further down Figure 6.51 until the **Database Server** and the **Database Name** fields visible (see Figure 6.52). Copy the values of these fields to a text editor. Make sure that the **DATABASE SERVER** and **DATABASE NAME** parameters of the analytics tests are configured with the copied values only.

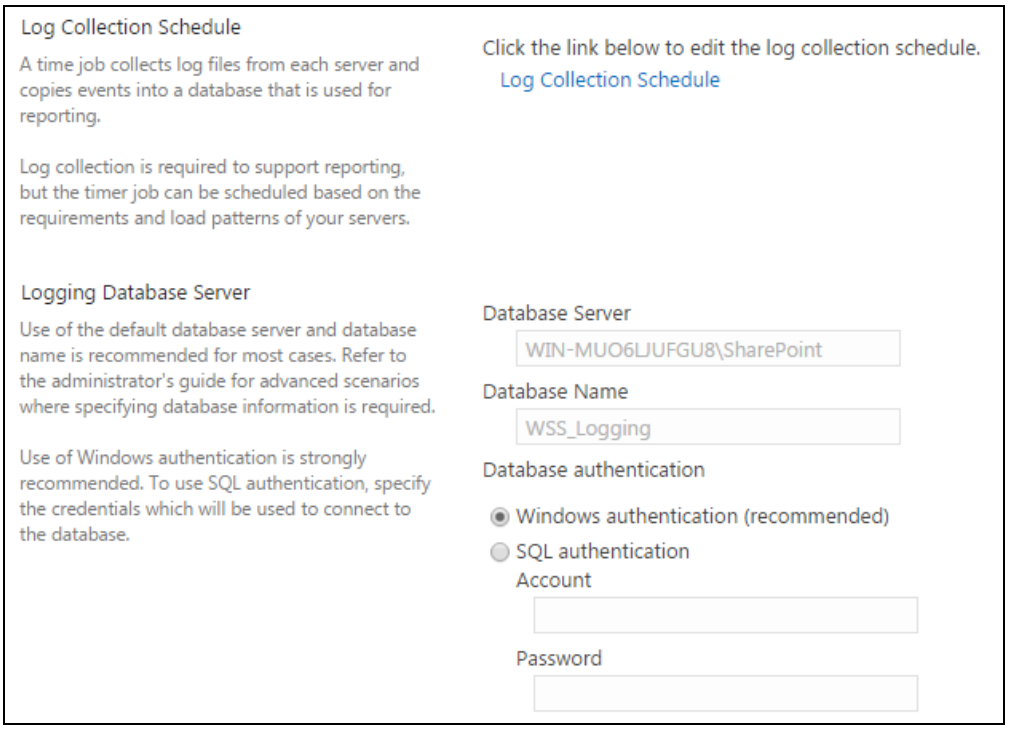


Figure 6.52: The name of the SQL server hosting the usage database and the name of the usage database

6.6.2 Web Application Usage Analytics Test

Enterprises typically use SharePoint to create web sites and web applications. The success of the SharePoint platform therefore hinges on how happy users are when interacting with the web applications that it helped create. If users of a web application constantly complain of slowness when browsing that web application, it indicates that user experience with the web application is sub-par. This in turn can hit user productivity badly, escalate troubleshooting time and costs of the enterprise, and adversely impact its revenues and reputation! To improve user experience with web applications and to build user confidence in the SharePoint platform, administrators should be able to quickly identify slow web applications and precisely pinpoint the reason for the slowness.

This is where the **Web Application Usage Analytics** test helps! This test queries the SharePoint usage database at configured intervals and collects metrics on web application usage that is stored therein – this includes the web applications accessed, count of users of each web application, the browsers that were used for web application access, web pages requested, the time taken for the requested pages to load, where page views spent time and how much, error responses returned, resources consumed, and many more. For each web application configured for monitoring, the test then reports the average time taken by that application to load pages. In the process, the test points administrators to slow web applications and also leads them to the probable source of the slowness

– is it owing to a latent web front end? is it because of slow service calls? Or is it due to inefficient queries to the backend database?

Sometimes, poor user experience can be attributed to HTTP errors. This is why, this test instantly alerts administrators to HTTP error responses, thus ensuring their timely intervention and rapid resolution of the error conditions.

This way, the **Web Application Usage Analytics** test enables administrators to detect web application slowness well before users notice, helps them promptly and accurately diagnose the source of the poor user experience with a web application, and thus ensures that they initiate measures to enhance user experience and pre-empt the damage that may be caused to revenue and reputation.

Note:

This test will run only if a **SharePoint Usage and Health Service** application is created and is configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each web application on SharePoint

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the Microsoft SQL server that is hosting the usage database.
Instance	If the SQL server hosting the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM is a suite of Microsoft security protocols that provides authentication, integrity,

Parameters	Description
	and confidentiality to users. NTLM version 2 ("NTLMv2") was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server hosting the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database Server Name	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test. Database Name
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the configured usage, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
Slow Transaction Cutoff (ms)	This test reports the count of slow page views and also pinpoints the pages that are slow. To determine whether/not a page is slow, this test uses the Slow Transaction Cutoff parameter. By default, this parameter is set to *4000 millisecs* (i.e., 4 seconds). This means that, if a page takes more than *4 seconds* to load, this test will consider that page as a slow page by default. You can increase or decrease this slow transaction cutoff according to what is 'slow' and what is 'normal' in your environment. **Note:** The default value of this parameter is the same as the default **Maximum threshold** setting of the *Avg page load time* measure – i.e., both are set to *4000 millisecs* by default. While the former helps eG to distinguish between slow and healthy page views for the purpose of providing detailed diagnosis, the latter tells eG when to generate an alarm on *Avg page load time*. For best results, it is recommended that both these settings are configured with the same value at all times. Therefore, if you change the value of one of these configurations, then make sure you update the value of the other as well. For instance, if the Slow Transaction Cutoff is changed to *6000 millisecs*, change the *Maximum Threshold of the Avg page load time* measure to *6000 millsecs* as well.

Parameters	Description
URL patterns to be ignored from monitoring	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll,*.gif,*.bmp**
Ignore Ajaxdelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore Ajaxdelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Unique users	Indicates the number of	Number	The detailed diagnosis of this

Measurement	Description	Measurement Unit	Interpretation
	unique users of this web application.		measure reveals the names of the unique users and the number of requests from each user to the web application being monitored. From this, you can identify those users who are actively using the web application.
Unique visitors	Indicates the number of unique visitors to this web application.	Number	SharePoint authenticated users and anonymous users (using IP address) are counted as visitors. Compare the value of this measure across web applications to identify the most popular one. You can use the detailed diagnosis of this measure to know who are the unique visitors to the web application and the number of requests from each visitor to the web application This way, you can identify that visitor who visits the web application most frequently.
Unique destinations	Indicates the number of unique destinations of this web application.	Number	To know the most popular destination URLs of this web application, use the detailed diagnosis of this measure. Here, you will find the top-10 destinations in terms of the number of hits.
Unique browsers	Indicates the number of unique browsers used for accessing this web application.	Number	To know which browsers are commonly used to access this web application, use the detailed diagnosis of this measure. Here, the unique browsers will be listed and the number of hits to the web application from each browser will be displayed

Measurement	Description	Measurement Unit	Interpretation
			alongside, so that you can instantly identify that browser that has been widely used to access the web application.
Unique referrers	Indicates the number of unique URLs external to this web application (parent web application is treated as external as well), from where the users navigated to this web application.	Number	To know which referrer URL was responsible for the maximum hits to this web application, use the detailed diagnosis of this measure. The top-10 unique referrer URLs in terms of the number of hits they generated will be displayed as part of the detailed diagnostics.
Apdex score	Indicates the Apdex score of this web application.	Number	Apdex (Application Performance Index) is an open standard developed by an alliance of companies. It defines a standard method for reporting and comparing the performance of software applications in computing. Its purpose is to convert measurements into insights about user satisfaction, by specifying a uniform way to analyze and report on the degree to which measured performance meets user expectations. The Apdex method converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied). The resulting Apdex score is a numerical measure of user satisfaction with the performance of enterprise applications. This metric can be used to report on any source of end-user performance measurements for

Measurement	Description	Measurement Unit	Interpretation
			which a performance objective has been defined. The Apdex formula is: **Apdex = (Satisfied Count + Tolerating Count / 2) / Total Samples** This is nothing but the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples. A score of 1.0 means all responses were satisfactory. A score of 0.0 means none of the responses were satisfactory. Tolerating responses half satisfy a user. For example, if all responses are tolerating, then the Apdex score would be 0.50. Ideally therefore, the value of this measure should be 1.0. A value less than 1.0 indicates that the user experience with the web application has been less than satisfactory.
Total page views	Indicates the number of times the pages in this web application were viewed by users.	Number	This is a good measure of the traffic to your web application, and also reveals how popular your web application is. An unusually high number of page views could be a cause for concern, as it could be owing to a malicious virus attack or an unscrupulous attempt to hack your web application. Either way, be wary of sudden, but significant spikes in the page view count!

Measurement	Description	Measurement Unit	Interpretation
Satisfied page views	Indicates the number of times pages in this web application were viewed without any slowness.	Number	A page view is considered to be slow when the average time taken to load that page exceeds the slow transaction cutoff configured for this test. If this slow transaction cutoff is not exceeded, then the page view is deemed to be 'satisfactory'. Ideally, the value of this measure should be high. If the value of this measure is much lesser than the value of the *Tolerating page views* and the *Frustrated page views*, it is a clear indicator that the experience of the users of this web application is below-par. In such a case, use the detailed diagnosis of the *Tolerating page views* and *Frustrated page views* measures to know which pages are slow.
Tolerating page views	Indicates the number of tolerating page views to this web application.	Number	If the *Average page load time* of a page exceeds the Slow Transaction Cutoff configuration of this test, but is less than 4 times the slow transaction cutoff (i.e., < 4 * slow transaction cutoff), then such a page view is considered to be a Tolerating page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the overall user experience from this browser is less than satisfactory.

Measurement	Description	Measurement Unit	Interpretation
			To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Frustrated page views	Indicates the number of frustrated page views to this web application.	Number	If the Average page load time of a page is over 4 times the Slow Transaction Cutoff configuration of this test (i.e., > 4 * slow transaction cutoff), then such a page view is considered to be a Frustrated page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the experience of users using this browser has been less than satisfactory. To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Average page load time	Indicates the average time taken by the pages in this web application to load completely.	Secs	This is the average interval between the time that a user initiates a request and the completion of the page load of the response in the user's browser. If the value of this measure is consistently high for a web application, there is reason to worry. This is because, it implies that the web application is slow in responding to requests. If this condition is allowed to persist, it can adversely impact user experience with the web

Measurement	Description	Measurement Unit	Interpretation
			application. You may want to check the Apdex score in such circumstances to determine whether/not user experience has already been affected. Regardless, you should investigate the anomaly and quickly determine where the bottleneck lies – is it with the web front-end? is it owing to slow service calls? Or is it because of inefficient queries to the backend? - so that the problem can be fixed before users even notice any slowness! For that, you may want to compare the values of the *Average service calls duration, Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test.
Average service calls duration	Indicates the time taken by this web application to generate service calls.	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average IIS latency	Indicates the average time requests to this web application took in the frontend web server after the requests were received	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average CPU duration*, and *Average query duration*

Measurement	Description	Measurement Unit	Interpretation
	by the frontend web server but before this web application began processing the requests.		measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average CPU duration	Indicates the average time for which requests to this web application used the CPU.	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency,* and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
SQL logical reads	Indicates the total number of 8 kilobyte blocks that this web application read from storage on the back-end database server.	Number	
Average CPU megacycles	Indicates the average number of CPU mega cycles spent processing the requests to this web application in the client application on the front end web server.	Number	
Total queries	Indicates the total number of database queries generated for this web application.	Number	

Measurement	Description	Measurement Unit	Interpretation
Average query duration	Indicates the average time taken for all backend database queries generated for this web application.	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency,* and *Average CPU duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average data consumed	Indicates the average bytes of data downloaded by requests to this web application.	KB	
GET requests	Indicates the number of GET requests to this web application.	Number	
POST requests	Indicates the number of POST requests to this web application.	Number	
OPTION requests	Indicates the number of OPTION request to this web application.	Number	
300 responses	Indicates the number of responses to requests to this web application with a status code in the 300-399 range	Number	300 responses could indicate page caching on the client browsers. Alternatively 300 responses could also indicate redirection of requests. A sudden change in this value could indicate a problem condition.
400 errors	Indicates the number responses to requests to this web application	Number	A high value indicates a number of missing/error pages.

Measurement	Description	Measurement Unit	Interpretation
	that had a status code in the range 400-499.		Use the detailed diagnosis of this measure to know when each of the 400 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.
500 errors	Indicates the number of responses to the requests to this web application that had a status code in the range 500-599.	Number	Since responses with a status code of 500- 600 indicate server side processing errors, a high value reflects an error condition. Use the detailed diagnosis of this measure to know when each of the 500 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.

6.6.3 Browser Usage Analytics Test

Different users use different browsers to access and browse the web sites and web applications created on SharePoint. Very often, user experience with a web site/application can vary with the browser being used! Using an obsolete or an unsupported browser can cause users to see errors or serious performance degradations when accessing web sites or mission-critical web application. This in turn can delay critical business operations, impair user productivity, and basically, be the reason for enterprises to incur huge penalities, mounting costs, and heavy losses! What administrators need to do therefore is to identify what browsers are being used by their users, see for themselves whether/not user experience changes with browser, and in the process, isolate those browsers that could be delivering a sub-par experience to their users.

This is where the **Browser Usage Analytics t**est helps! This test queries the SharePoint usage database at configured intervals and collects metrics on browser usage that is stored therein. For each browser used, the test then reports the average time taken by that browser to load pages. In the process, the test points administrators to slow browsers and also leads them to the probable

source of the slowness - is it owing to a latent web front-end? Is it because of slow service calls? Or is it due to inefficient queries to the backend database?

The test also captures HTTP errors that occurred when using each browser, thus enabling administrators to quickly detect browser-related issues and rapidly fix them before user experience is impacted.

This way, the **Browser Usage Analytics** test enables administrators to identify problematic browsers, helps them to try and enhance the experience of users using such browsers, or at least conclude which browsers are not ideal for usage with which web sites/web applications.

Note:

This test will run only if a SharePoint Usage and Health Service application is created and is configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each browser using which users are accessing SharePoint web applications

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the SQL server that hosts the usage database.
Instance	If the SQL server that hosts the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM is a suite of Microsoft security protocols that provides authentication, integrity, and confidentiality to users. NTLM version 2 (“NTLMv2”) was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server that

Parameters	Description
	hosts the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database server	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test.
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the usage database configured, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
Slow Transaction Cutoff (ms)	This test reports the count of slow page views and also pinpoints the pages that are slow. To determine whether/not a page is slow, this test uses the Slow Transaction Cutoff parameter. By default, this parameter is set to *4000* millisecs (i.e., 4 seconds). This means that, if a page takes more than 4 seconds to load, this test will consider that page as a *slow page* by default. You can increase or decrease this Slow Transaction Cutoff according to what is '*slow*' and what is '*normal*' in your environment. **Note:** The default value of this parameter is the same as the default **Maximum threshold** setting of the *Avg page load time* measure – i.e., both are set to *4000 millisecs* by default. While the former helps eG to distinguish between slow and healthy page views for the purpose of providing detailed diagnosis, the latter tells eG when to generate an alarm on *Avg page load time*. For best results, it is recommended that both these settings are configured with the same value at all times. Therefore, if you change the value of one of these configurations, then make sure you update the value of the other as well. For instance, if the Slow Transaction Cutoff is changed to *6000 millisecs*, change the **Maximum Threshold** of the *Avg page load time* measure to *6000 millisecs* as well.
Show Unknown Browsers	By default, this flag is set to **No**. This means, by default, eG will monitor only those browsers that SharePoint can recognize. If users use browsers that SharePoint cannot recognize, then, usage analytics of such browsers will be grouped under the **Unknown** browser type in the **Usage database**. If you want to

Parameters	Description
	view metrics related to the **Unknown** browser type as well, then set this flag to **Yes**. In this case, **Unknown** will be displayed as an additional descriptor of this test.
URL patterns to be ignored from monitoring	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll**,***.gif,*.bmp**
Ignore AjaxDelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore AjaxDelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.
Fetch Farm Measures	Typically, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain	When monitoring a SharePoint 2010 server, this test has to be configured with

Parameters	Description
User, Password, and Confirm Password	the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.

Parameters	Description
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Unique users	Indicates the number of unique users of this web application.	Number	Compare the value of this measure across browsers to identify the most popular one. The detailed diagnosis of this measure reveals the names of the unique users and the number of requests from each user to the browser. From this, you can identify those users who are actively using the browser.
Unique visitors	Indicates the number of unique visitors using this browser.	Number	SharePoint authenticated users and anonymous users (using IP address) are counted as visitors. You can use the detailed diagnosis of this measure to know who are the unique visitors to the browser and the number of requests from each visitor to the browser. This way, you can

Measurement	Description	Measurement Unit	Interpretation
			identify that visitor who uses the browser most frequently.
Unique destinations	Indicates the number of unique destinations of this browser.	Number	To know the most popular destination URLs, use the detailed diagnosis of this measure. Here, you will find the top-10 destinations in terms of the number of hits.
Unique referrers	Indicates the number of unique URLs external to this browser (parent web application is treated as external as well), from where the users navigated to this browser.	Number	To know which referrer URL was responsible for the maximum hits, use the detailed diagnosis of this measure. The top-10 unique referrer URLs in terms of the number of hits they generated will be displayed as part of the detailed diagnostics.
Apdex score	Indicates the apdex score of this browser.	Number	Apdex (Application Performance Index) is an open standard developed by an alliance of companies. It defines a standard method for reporting and comparing the performance of software applications in computing. Its purpose is to convert measurements into insights about user satisfaction, by specifying a uniform way to analyze and report on the degree to which measured performance meets user expectations. The Apdex method converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied). The resulting Apdex score is a numerical measure of user satisfaction with the

Measurement	Description	Measurement Unit	Interpretation
			performance of enterprise applications. This metric can be used to report on any source of end-user performance measurements for which a performance objective has been defined. The Apdex formula is: **Apdex = (Satisfied Count + Tolerating Count / 2) / Total Samples** This is nothing but the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples. A score of 1.0 means all responses were satisfactory. A score of 0.0 means none of the responses were satisfactory. Tolerating responses half satisfy a user. For example, if all responses are tolerating, then the Apdex score would be 0.50. Ideally therefore, the value of this measure should be 1.0. A value less than 1.0 indicates that the user experience with the browser has been less than satisfactory.
Total page views	Indicates the number of times the pages in SharePoint web sites/web applications were viewed using this browser.	Number	This is a good measure of the traffic to web sites/web applications from a given browser. A high number of page views from a single browser typically indicates how popular the browser is. Sudden, but significant spikes in the page view

Measurement	Description	Measurement Unit	Interpretation
			count could be a cause for concern, as it could be owing to a malicious virus attack or an unscrupulous attempt to hack your web site/web application.
Satisfied page views	Indicates the number of times pages were viewed in this browser without any slowness.	Number	A page view is considered to be slow when the average time taken to load that page exceeds the slow transaction cutoff configured for this test. If this slow transaction cutoff is not exceeded, then the page view is deemed to be 'satisfactory'. Ideally, the value of this measure should be high. If the value of this measure is much lesser than the value of the Tolerating page views and the Frustrated page views, it is a clear indicator that the experience of the users of this browser is below-par. In such a case, use the detailed diagnosis of the Tolerating page views and Frustrated page views measures to know which pages are slow.
Tolerating page views	Indicates the number of tolerating page views in this browser.	Number	If the *Average page load time* of a page exceeds the Slow Transaction Cutoff configuration of this test, but is less than 4 times the slow transaction cutoff (i.e., < 4 * slow transaction cutoff), then such a page view is considered to be a Tolerating page view. Ideally, the value of this measure

Measurement	Description	Measurement Unit	Interpretation
			should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the overall user experience from this browser is less than satisfactory. To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Frustrated page views	Indicates the number of frustrated page views in this browser.	Number	If the *Average page load time* of a page is over 4 times the Slow Transaction Cutoff configuration of this test (i.e., > 4 * slow transaction cutoff), then such a page view is considered to be a Frustrated page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the experience of users using this browser has been less than satisfactory. To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Average page load time	Indicates the average time taken by the pages to load completely in this browser.	Secs	This is the average interval between the time that a user initiates a request and the completion of the page load of the response in the user's browser. If the value of this measure is consistently high for a browser, there

Measurement	Description	Measurement Unit	Interpretation
			is reason to worry. This is because, it implies that the browser is slow in responding to requests. If this condition is allowed to persist, it can adversely impact user experience. You may want to check the Apdex score in such circumstances to determine whether/not user experience has already been affected. Regardless, you should investigate the anomaly and quickly determine where the bottleneck lies – is it with the browser itself? is it with the web front-end? is it owing to slow service calls? Or is it because of inefficient queries to the backend? - so that the problem can be fixed before users even notice any slowness! For that, you may want to compare the values of the *Average service calls duration, Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test.
Average service calls duration	Indicates the time taken by this browser to generate service calls.	Secs	If the Avg page load time of a browser is abnormally high, then you can compare the value of this measure with that of the *Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?

Measurement	Description	Measurement Unit	Interpretation
Average IIS latency	Indicates the average time requests to this browser took in the frontend web server after the requests were received by the frontend web server but before this browser began processing the requests.	Secs	If the *Avg page load time* of a browser is abnormally high, then you can compare the value of this measure with that of *Average service calls duration, Average CPU duration*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average CPU duration	Indicates the average time for which requests to this browser used the CPU.	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
SQL logical reads	Indicates the total number of 8 kilobyte blocks that this browser read from storage on the back-end database server.	Number	
Average CPU megacycles	Indicates the average number of CPU mega cycles spent processing the requests to this browser in the client application on the front	Number	

Measurement	Description	Measurement Unit	Interpretation
	end web server.		
Total queries	Indicates the total number of database queries generated by requests to this browser.	Number	
Average query duration	Indicates the average time taken for all backend database queries generated by requests to this browser.	Secs	If the *Avg page load time* of a browser is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency*, and *Average CPU duration* measures of this test to know what exactly is delaying page loading – a slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average data consumed	Indicates the average bytes of data downloaded by requests to this browser.	KB	
GET requests	Indicates the number of GET requests to this web browser.	Number	
POST requests	Indicates the number of POST requests to this web browser.	Number	
OPTION requests	Indicates the number of OPTION requests to this browser.	Number	
300 responses	Indicates the number of responses for requests	Number	300 responses could indicate page caching on the client browsers.

Measurement	Description	Measurement Unit	Interpretation
	to this browser that had a status code in the 300-399 range.		Alternatively 300 responses could also indicate redirection of requests. A sudden change in this value could indicate a problem condition.
400 errors	Indicates the number responses for requests to this browser that had a status code in the range 400-499.	Number	A high value indicates a number of missing/error pages. Use the detailed diagnosis of this measure to know when each of the 400 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.
500 errors	Indicates the number of responses for requests to this browser that had a status code in the range 500-599.	Number	Since responses with a status code of 500- 600 indicate server side processing errors, a high value reflects an error condition. Use the detailed diagnosis of this measure to know when each of the 500 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.

6.6.4 User Analytics Test

Enterprises typically use SharePoint to create web sites and web applications. The success of the SharePoint platform therefore hinges on the level of user satisfaction with the web sites and applications created on that platform. The key to ensuring high user satistaction lies in closely tracking user requests to the web sites/web applications on SharePoint, measuring the responsiveness of the web sites/web applications to the user requests, instantly detecting poor responsiveness, and accurately isolating which user's experience is being impacted by this slowness, well before that user notices! This can be achieved using the **User Analytics** test!

This test queries the SharePoint usage database at configured intervals and collects usage metrics that are stored therein – this includes the web sites/web applications accessed, count and names of users of each web site/web application, the browsers that were used for web site/web application access, web pages requested, the time taken for the requested pages to load, where page views spent time and how much, error responses returned, resources consumed, and many more. Using the query results, the test then auto-discovers the users accessing each of the web sites/web applications that are configured for monitoring. Then, for each such user, this test reports the average time taken by the corresponding site/web application to load pages. In the process, the test points administrators to slow web sites/web applications, reveals the exact user who has suffered the most owing to this slowness, and also leads them to the probable source of the slowness – is it owing to a latent web front end? is it because of slow service calls? Or is it due to inefficient queries to the backend database?

Sometimes, poor user experience can be attributed to HTTP errors. This is why, this test instantly alerts administrators to HTTP error responses, thus ensuring their timely intervention and rapid resolution of the error conditions.

This way, the **User Analytics** test enables administrators to proactively detect users who are experiencing or who will potentially experience performance issues with a web site/web application, helps them promptly and accurately diagnose the source of the poor user experience, and thus ensures that they initiate measures to enhance user experience and pre-empt the damage that may be caused to revenue and reputation.

Note:

This test will run only if a SharePoint Usage and Health Service application is created and is configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/Remote agent

Outputs of the test : One set of results for each user accessing every SharePoint **SITE** configured for monitoring

First-level descriptor: Site URL

Second-level descriptor: User name

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the Microsoft SQL server that is hosting the usage database.
Instance	If the SQL server hosting the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM is a suite of Microsoft security protocols that provides authentication, integrity, and confidentiality to users. NTLM version 2 ("NTLMv2") was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server hosting the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database Server Name	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test. Database Name
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the configured usage, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
Slow Transaction Cutoff (ms)	This test reports the count of slow page views and also pinpoints the pages that are slow. To determine whether/not a page is slow, this test uses the Slow Transaction Cutoff parameter. By default, this parameter is set to *4000 millisecs* (i.e., 4 seconds). This means that, if a page takes more than *4 seconds* to load,

Parameters	Description
	this test will consider that page as a slow page by default. You can increase or decrease this slow transaction cutoff according to what is 'slow' and what is 'normal' in your environment. **Note:** The default value of this parameter is the same as the default **Maximum threshold** setting of the *Avg page load time* measure – i.e., both are set to *4000 millisecs* by default. While the former helps eG to distinguish between slow and healthy page views for the purpose of providing detailed diagnosis, the latter tells eG when to generate an alarm on *Avg page load time*. For best results, it is recommended that both these settings are configured with the same value at all times. Therefore, if you change the value of one of these configurations, then make sure you update the value of the other as well. For instance, if the Slow Transaction Cutoff is changed to *6000 millisecs*, change the *Maximum Threshold of the Avg page load time* measure to *6000 millsecs* as well.
Site	Configure a comma-separated list of web site URLs that you want this test to monitor. For eg., *http://www.msproject28rk2:11982,http://www.mydocs.com*
URL patterns to be ignored from monitoring	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll,*.gif,*.bmp**
Ignore Ajaxdelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore Ajaxdelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.
Max Acceptable Duration	By default, this parameter is set to 3 (seconds). This implies that this test, by default, will report metrics for only those web sites containing one/more web parts that process requests for a duration longer than the 3 seconds. You can increase or decrease the value of this parameter, depending upon what you think is 'slow' in your environment. This way, you can configure the test to focus on only those web sites that contain slow or critical web parts alone.
Fetch Farm Measures	Typically, farm-level metrics – eg., metrics on farm status, site collections, usage analytics – will not vary from one SharePoint server in the farm to

Parameters	Description
	another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the **Central Administration** site. Accordingly, this parameter is set to **If Central Administration** by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the **Central Administration** site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the **Central Administration** site. For this, set this parameter to **Yes** when configuring this test for that member server.

Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges:
	• The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**.
	• The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**.
	• The user should be part of the following groups on the eG agent host:
	  • Administrators
	  • WSS_ADMIN_WPG
	  • IIS_USRS
	  • Performance Monitor Users
	  • WSS_WPG

Parameters	Description
	• Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the domain text box, and then, enter the credentials of the user in the domain user and password text boxes. To confirm the password, retype it in the confirm password text box.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Unique sessions	Indicates the number of unique sessions for this user on this web site.	Number	Compare the value of this measure across users to identify the user who has the maximum number of open sessions on the site, and is hence, probably overloading the site. The detailed diagnosis of this measure reveals the unique client IP addresses from which the user launched his/her sessions and the number of requests received from each IP address.
Unique destinations	Indicates the number of unique destinations for this site for this user.	Number	To know the most popular destination URLs for a user, use the detailed diagnosis of this measure. Here, you will find the top- 10 destinations in terms of the number of hits.
Unique referrers	Indicates the number of unique URLs external to this site (parent web application is treated as external as well), from where this user navigated to the browser.	Number	To know which referrer URL was responsible for the maximum hits, use the detailed diagnosis of this measure. The top-10 unique referrer URLs in terms of the number of hits they generated will be displayed as part of the detailed diagnostics.
Apdex score	Indicates the Apdex score of this user for this site.	Number	Apdex (Application Performance Index) is an open standard developed by an alliance of companies. It defines a standard method for reporting and comparing the performance of software applications in computing. Its purpose is to convert measurements

Measurement	Description	Measurement Unit	Interpretation
			into insights about user satisfaction, by specifying a uniform way to analyze and report on the degree to which measured performance meets user expectations. The Apdex method converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied). The resulting Apdex score is a numerical measure of user satisfaction with the performance of enterprise applications. This metric can be used to report on any source of end-user performance measurements for which a performance objective has been defined. The Apdex formula is: **Apdex = (Satisfied Count + Tolerating Count / 2) / Total Samples** This is nothing but the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples. A score of 1.0 means all responses were satisfactory. A score of 0.0 means none of the responses were satisfactory. Tolerating responses half satisfy a user. For example, if all responses are tolerating, then the Apdex score would be 0.50. Ideally therefore, the value of this measure should be 1.0. A value less

Measurement	Description	Measurement Unit	Interpretation
			than 1.0 indicates that this user's experience with the corresponding web site has been less than satisfactory.
Total page views	Indicates the number of times the pages this web site were viewed by this user.	Number	This is a good measure of the traffic to a web site from a particular user. A high number of page views from a single user typically indicates how frequently that user is accessing the web site. Sudden, but significant spikes in the page view count could be a cause for concern, as it could be owing to a malicious virus attack or an unscrupulous attempt to hack your web site/web application.
Satisfied page views	Indicates the number of times pages were viewed in this web site by this user without any slowness.	Number	A page view is considered to be slow when the average time taken to load that page exceeds the slow transaction cutoff configured for this test. If this slow transaction cutoff is not exceeded, then the page view is deemed to be 'satisfactory'. Ideally, the value of this measure should be high. If the value of this measure is much lesser than the value of the *Tolerating page views* and the *Frustrated page views*, it is a clear indicator that the experience of the user is below-par. In such a case, use the detailed diagnosis of the *Tolerating page views* and *Frustrated page views* measures to know which pages are slow.

Measurement	Description	Measurement Unit	Interpretation
Tolerating page views	Indicates the number of tolerating page views for this user in this web site.	Number	If the *Average page load time* of a page exceeds the Slow Transaction Cutoff configuration of this test, but is less than 4 times the slow transaction cutoff (i.e., < 4 * slow transaction cutoff), then such a page view is considered to be a Tolerating page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the user is less than satisfactory. To know which pages are contributing to this sub- par experience, use the detailed diagnosis of this measure.
Frustrated page views	Indicates the number of frustrated page views for this user in this web site.	Number	If the *Average page load time* of a page is over 4 times the Slow Transaction Cutoff configuration of this test (i.e., > 4 * slow transaction cutoff), then such a page view is considered to be a Frustrated page view. Ideally, the value of this measure should be 0. A value higher than that of the *Satisfied page views* measure is a cause for concern, as it implies that the experience of the user has been less than satisfactory. To know which pages are contributing to this sub-par experience, use the detailed diagnosis of this measure.
Average page load	Indicates the average	Msecs	This is the average interval between

Measurement	Description	Measurement Unit	Interpretation
time	time taken by the pages in this site that are requested by this user to load completely.		the time that a user initiates a request and the completion of the page load of the response in the user's browser. If the value of this measure is consistently high for a user, it implies a degraded user experience. You may want to check the Apdex score in such circumstances to determine whether/not user experience has already been affected. Regardless, you should investigate the anomaly and quickly determine where the bottleneck lies – is it with the web front-end? is it owing to slow service calls? Or is it because of inefficient queries to the backend? - so that the problem can be fixed before users even notice any slowness! For that, you may want to compare the values of the *Average service calls duration, Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test.
Average service calls duration	Indicates the time taken by the requests of this user to this web site to generate service calls.	Secs	If the *Avg page load time* of a user is abnormally high, then you can compare the value of this measure with that of the *Average CPU duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow front-end web server? inefficient queries to the backend database? or slow service calls?

Measurement	Description	Measurement Unit	Interpretation
Average IIS latency	Indicates the average time requests from this user took in the frontend web server after the requests were received by the frontend web server but before the browser began processing the requests.	Secs	If the *Avg page load time* of a user is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average CPU duration*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow browser? A slow front- end web server? inefficient queries to the backend database? or slow service calls?
Average CPU duration	Indicates the average time for which requests from this user to this site used the CPU.	Secs	If the *Avg page load time* of a web application is abnormally high, then you can compare the value of this measure with that of the *Average service calls duration, Average IIS latency*, and *Average query duration* measures of this test to know what exactly is delaying page loading – a slow browser? a slow front-end web server? inefficient queries to the backend database? or slow service calls?
SQL logical reads	Indicates the total number of 8 kilobyte blocks that this browser read from storage on the back-end database server.	Number	
Average CPU megacycles	Indicates the average number of CPU mega cycles spent processing the requests to this	Number	

Measurement	Description	Measurement Unit	Interpretation
	browser in the client application on the front end web server.		
Total queries	Indicates the total number of database queries generated by requests to this browser.	Number	
Average query duration	Indicates the average time taken for all backend database queries generated by requests from this user to this web site.	Secs	If the Avg page load time of a browser is abnormally high, then you can compare the value of this measure with that of the Average service calls duration, Average IIS latency, and Average CPU duration measures of this test to know what exactly is delaying page loading – a slow browser? a slow front-end web server? inefficient queries to the backend database? or slow service calls?
Average data consumed	Indicates the average bytes of data downloaded by the requests of this user.	KB	
GET requests	Indicates the number of GET requests from this user to this site.	Number	
POST requests	Indicates the number of POST requests from this user to this site.	Number	
OPTION requests	Indicates the number of OPTION requests from this user to this site.	Number	

Measurement	Description	Measurement Unit	Interpretation
300 responses	Indicates the number of responses for requests from this user that had a status code in the 300-399 range.	Number	300 responses could indicate page caching on the client browsers. Alternatively 300 responses could also indicate redirection of requests. A sudden change in this value could indicate a problem condition.
400 errors	Indicates the number responses for requests from this user that had a status code in the range 400-499.	Number	A high value indicates a number of missing/error pages. Use the detailed diagnosis of this measure to know when each of the 400 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.
500 errors	Indicates the number of responses for requests from this user that had a status code in the range 500-599.	Number	Since responses with a status code of 500- 600 indicate server side processing errors, a high value reflects an error condition. Use the detailed diagnosis of this measure to know when each of the 500 errors occurred, which user experienced the error, when using what browser, from which machine. This information will greatly aid troubleshooting.

6.6.5 Distributed Cache Usage Analytics Test

The Distributed Cache service, which is built on Windows Server AppFabric Cache, is set to run in a collocated mode on all SharePoint 2013 Servers by default. It's essential for maintaining the large amounts of information on your SharePoint Server, ensuring that the information is fresh and readily available for the end user.

Caching functionalities, provided by the Distributed Cache service, enable web applications deployed on SharePoint to quickly retrieve data without any dependency on databases stored in SQL Server, as everything is stored in memory.

Any SharePoint server in the farm running the Distributed Cache service is known as a cache host. Cache size is the memory allocated to the Distributed Cache service on the cache host.

At any given point in time, sufficient memory resources should be available to the Distributed cache service to ensure optimum cache usage and to assure SharePoint users of a satisfactory experience with their web applications. In the absence of adequate memory, cache lookups will be delayed or even missed, thus affecting overall SharePoint performance and adversely impacting the health of user interactions with the web applications.

It is hence imperative that administrators keep an eye on the usage of the cache service by each dependent web application, rapidly detect unexpected slowness in cache reads and writes, capture cache misses, and figure out if such anomalies are owing to the bad size of the Distributed cache service. This is what the **Distributed Cache Usage Analytics** test help administrators do!

This test queries the SharePoint usage database and retrieves metrics revealing how each web application uses the distributed cache, from it. The metrics so collected reveal the following:

- Is any web application reading from and/or writing to the cache slowly? If so, which host is slow?
- Is any web application overloading the cache with read/write requests?
- Which web application is experiencing many cache misses?
- Are there any cache failures? If so, which web application failed to read from or write to the cache?

This way, the test brings cache usage and sizing irregularities to light, pinpoints the exact web application that is being impacted by these abnormalities, and thus prompts administrators to right-size the cache to ensure peak application performance.

Note:

- This test will run only if a **SharePoint Usage and Health Service** application is created and is configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.
- This test is not applicable when the target server is a Microsoft SharePoint 2010 server

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each web application in the monitored SharePoint server

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the SQL server that hosts the usage database.
Instance	If the SQL server that hosts the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM is a suite of Microsoft security protocols that provides authentication, integrity, and confidentiality to users. NTLM version 2 ("NTLMv2") was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server that hosts the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database server Name	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test.
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the usage database configured, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
URL patterns to be ignored from	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can

Parameters	Description
monitoring	remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll**,***.gif,*.bmp**
Ignore AjaxDelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore AjaxDelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.
Fetch Farm Measures	Typicaly, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know

Parameters	Description
	how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users ◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of

Parameters	Description
	this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Reads	Indicates the number of cache reads performed by this web application.	Number	
Average read duration	Indicates the average time taken by this web application to read from the cache.	Msecs	A low value is desired for this measure. A consistent increase in the value of this measure could indicate a reading bottleneck. One of the reasons for reading delays is insufficient memory for the cache on the host. You may want to right-size the cache to make sure that your requests are serviced quickly and efficiently. Reading delays can also occur if the cache is overloaded with read requests or too much data is to be read. Whenever this measure registers an abnormally high value for a web application, look up the value reported by the *Reads* and *Average read size* measures for the same web application to determine

Measurement	Description	Measurement Unit	Interpretation
			whether/not the slowness can be attributed to the count and size of the reads.
Average read size	Indicates how many kilobytes of data, on an average, are read from the cache by this web application.	KB	
Writes	Indicates the number of writes to the cache by this web application.	Number	
Average write duration	Indicates the average time taken by this web application to write to the cache.	Msecs	A low value is desired for this measure. A consistent increase in the value of this measure could indicate a writing bottleneck. One of the reasons for writing delays is insufficient memory for the cache. You may want to right- size the cache to make sure that your requests are serviced quickly and efficiently. Writing delays can also occur if the web application is overloading the cache with write requests or too much data is to be written. Whenever this measure registers an abnormally high value for a web application, look up the value reported by the *Writes* and *Average writes* size measure for the same application to determine whether/not the slowness can be attributed to the unusually high number and size of the writes.

Measurement	Description	Measurement Unit	Interpretation
Average writes size	Indicates how many kilobytes of data, on an average, are written to the cache by this web application.	Number	
Misses	Indicates the number of requests from this web application that were not serviced by the cache.	Number	Ideally, the value of this measure should be 0. If on the other hand, this measure value is close to the value of the Objects requested measure, it is a cause for serious concern, as it implies that almost all objects requested were not found in the cache. Under such circumstances, use the detailed diagnosis of this measure to know which web site addresses could not be found in the cache. One of the reasons for a high number of misses could be insufficient memory allocation to the cache service. In such a situation, you may want to increase the cache size by adding more memory.
Hits	Indicates the number of requests from this web application that were successfully served by this cache.	Number	Ideally, the value of this measure should be the same as the value of the Objects requested measure. If not, check whether the cache has enough memory, and if required, add more memory to it.
Failures	Indicates the number of cache failures experienced by this web application.	Number	Ideally, the value of this measure should be 0. If this measure reports a non-zero value, then use the detailed diagnosis of this measure

Measurement	Description	Measurement Unit	Interpretation
			to know which web site addresses were being looked up in the cache when the failures occurred.
Objects requested	Indicates the number of objects requested by this web application.	Number	

Use the detailed diagnosis of the *Misses* measure to know which web site addresses could not be found in the cache.

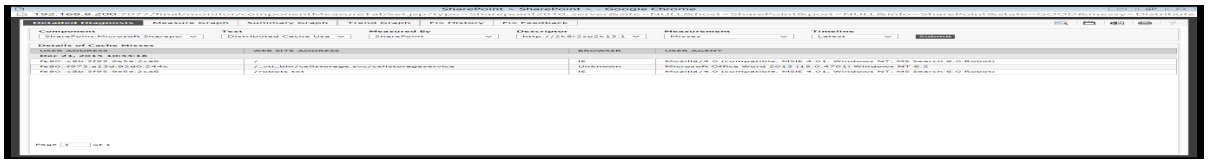


Figure 6.53: The detailed diagnosis of the Misses measure

Use the detailed diagnosis of the *Failures* measure to know which web site addresses were being looked up in the cache when the failures occurred.

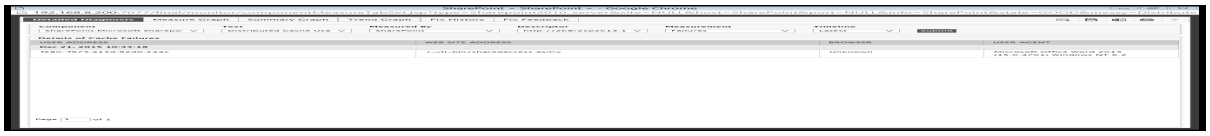


Figure 6.54: The detailed diagnosis of the Failures measure

6.6.6 Critical or Slow Web Parts Test

A web site/web application on SharePoint typically constitutes numerous web pages. The performance of each of these pages is a key determinant of user experience with the web site/web application as a whole! Each web page in turn is made up of multiple web parts, So, when a web page slows down, more often than not, one/more web parts that constitute that web page will be responsible for the slowness! This is why, when users complain that a web site/web application is slow, administrators should first check whether/not the web parts used to build that web site/web application are taking too long to load, and if so, why. This is where the **Critical or Slow Web Parts** test helps!

For each web site, this test reports the time taken by the web parts in that site to load. In the event of undue delay in web part loading, the test also points administrators to the probable cause of the delay – is it because of processing delays in the web part? Is it because the web parts took too long to generate service calls? Or is it owing to inefficient queries to the backend database? Detailed diagnosis of the test also leads you to the precise service calls and queries that could have contributed to the slowness.

For this test to run and report metrics, the following pre-requisites should be fulfilled:

- A **SharePoint Usage and Health Service** application should be created and should be configured to collect usage and health data. To know how to create and configure this application, follow the steps detailed in Section **6.6.1.1**.
- The **SharePoint Developer Dashboard** should be enabled. The steps for the same are detailed in Section **6.6.6.1** of this document.

Note:

This test is not applicable when the target server is a Microsoft SharePoint 2010 server

Target of the test : A Microsoft SharePoint Server

Agent deploying the test : An internal/remote agent

Outputs of the test : One set of results for each web site containing web parts that process requests for a duration longer than the configured Max Acceptable Duration

Configurable parameters for the test

Parameters	Description
Test period	This indicates how often should the test be executed.
Host	The host for which the test is to be configured.
Port	The port at which the host server listens.
SQL Port Number	Specify the port number of the SQL server that hosts the usage database.
Instance	If the SQL server that hosts the usage database is instance-based, then provide the instance name here. If not, then set this to *none*.
SSL	If the SQL server hosting the usage database is SSL-enabled, then set this flag to **Yes**. If not, set it to **No**.
Isntlmv2	In some Windows networks, NTLM (NT LAN Manager) may be enabled. NTLM

Parameters	Description
	is a suite of Microsoft security protocols that provides authentication, integrity, and confidentiality to users. NTLM version 2 ("NTLMv2") was concocted to address the security issues present in NTLM. By default, the Isntlmv2 flag is set to **No**, indicating that NTLMv2 is not enabled by default on the SQL server that hosts the usage database. Set this flag to **Yes** if NTLMv2 is enabled on that SQL server.
Database Domain	Specify the fully qualified name of the domain in which the Microsoft SQL server hosting the usage database operates. For instance, your specification can be: *SharePoint.eginnovations.com*
Database server Name	Specify the name of Microsoft SQL server that hosts the usage database to be accessed by this test.
Database Name	Specify the name of the usage database that this test should access.
Database User Name, Database Password, Confirm Password	Specify the credentials of a user who has read-only access to the usage database configured, in the Database User Name and Database Password text boxes. Then, confirm the password by retyping it in the Confirm Password text box.
Max Acceptable Duration	By default, this parameter is set to 3 (seconds). This implies that this test, by default, will report metrics for only those web sites containing one/more web parts that process requests for a duration longer than the 3 seconds. You can increase or decrease the value of this parameter, depending upon what you think is 'slow' in your environment. This way, you can configure the test to focus on only those web sites that contain slow or critical web parts alone.
URL patterns to be ignored from monitoring	By default, this test does not track requests to the following URL patterns: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll** . If required, you can remove one/more patterns from this default list, so that such patterns are monitored, or can append more patterns to this list in order to exclude them from monitoring. For instance, to additionally ignore URLs that end with **.gif** and **.bmp** when monitoring, you need to alter the default specification as follows: ***.js,*.css,*.jpeg,*.jpg,*.png,*.asmx,*.ashx,*.svc,*.dlll**,***.gif,*.bmp**
Ignore AjaxDelta Pages	By default, this test ignores all requests to AjaxDelta pages. This is why, the Ignore AjaxDelta Pages is set to **Yes** by default. If you want the test to track requests to the AjaxDelta pages as well, set this flag to **No**.

Parameters	Description
Fetch Farm Measures	Typicaly, farm-level metrics - eg., metrics on farm status, site collections, usage analytics - will not vary from one SharePoint server in the farm to another. If these metrics are collected and stored in the eG database for each monitored server in the SharePoint farm, it is bound to unnecessarily consume space in the database and increase processing overheads. To avoid this, farm-level metrics collection is by default switched off for the member servers in the SharePoint farm, and enabled only if the server being monitored is provisioned as the Central Administration site. Accordingly, this parameter is set to If Central Administration by default. This default setting ensures that farm-level metrics are collected from and stored in the database for only a single SharePoint server in the farm. If you want to completely switch-off farm-level metrics collection for a SharePoint farm, then set this parameter to **No**. Some high-security environments may not allow an eG agent to be deployed on the Central Administration site. Administrators of such environments may however require farm-level insights into status and performance. To provide these insights for such environments, you can optionally enable farm-level metrics collection from any monitored member server in the farm, even if that server is not provisioned as the Central Administration site. For this, set this parameter to **Yes** when configuring this test for that member server.
Domain, Domain User, Password, and Confirm Password	When monitoring a SharePoint 2010 server, this test has to be configured with the credentials of a domain user with the following privileges: • The user should be part of the SharePoint Farm Administrators group. To know how to add a user to this group, refer to Section **4.1**. • The user should have shell admin access to all databases in SharePoint. To know how to grant this privilege to a user, refer to Section **4.2**. • The user should be part of the following groups on the eG agent host: ◦ Administrators ◦ WSS_ADMIN_WPG ◦ IIS_USRS ◦ Performance Monitor Users

Parameters	Description
	◦ WSS_WPG ◦ Users To know how to add a user to one of these groups, refer to Section **4.3**. • The user should have full control access to each web application that needs to be monitored on the SharePoint server. To know how to grant this level of access to a user, refer to Section **4.4**. • The user should have read and execute access to the eG agent install directory. To know how to grant this level of access to a user, refer to Section **4.5**. It is recommended that you create a special user for this purpose and assign the aforesaid privileges to him/her. Once such a user is created, specify the domain to which that user belongs in the Domain text box, and then, enter the credentials of the user in the Domain User and Password text boxes. To confirm the password, retype it in the Confirm Password text box.
DD Frequency	Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against DD frequency.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Duration	Indicates the time taken by the web parts in this web site to load.	Secs	Compare the value of this measure across web sites to identify the slowest web site. Use the detailed diagnosis of this measure to know the details of requests that were processed slowly by the web parts in this web site.
CPU duration	Indicates the time spent by the web parts in this web site processing requests.	Secs	If the value of the *Duration* measure is abnormally high, then compare the value of this measure with that of the *Total SQL duration* and *Total service call duration* measures to determine the accurate source of the slowness - is it because of processing delays in the web parts? Is it because the web parts took too long to generate service calls? Or is it owing to inefficient queries run by the web parts in the backend database?
SQL queries	Indicates the number of queries executed by the web parts in this web site.	Number	Use the detailed diagnosis of this measure to know which queries were run and the duration of each query. This way, long running queries can be identified.
Total SQL duration	Indicates the total time taken by the web parts in this web site to run SQL queries.	Secs	If the value of the *Duration* measure is abnormally high, then compare the value of this measure with that of the *Total CPU duration* and *Total service call duration* measures to determine the accurate source of the slowness - – is it because of processing delays

Measurement	Description	Measurement Unit	Interpretation
			in the web parts? Is it because the web parts took too long to generate service calls? Or is it owing to inefficient queries run by the web parts? If queries are delaying web part operations, use the detailed diagnosis of the *SQL queries* measure to identify the long running / inefficient queries and then proceed to fine-tune them.
SharePoint requests	Indicates the number of requests to the web parts in this web site.	Number	The detailed diagnosis of this measure reveals the URLs of the SharePoint requests and the processing time of each request. Requests for which the web parts in a web site took too long to respond can be isolated in this manner.
Asserts	Indicates the number of asserts performed by the web parts in this web site.	Number	
Service calls	Indicates the number of service calls generated by the web parts in this web site.	Number	The detailed diagnosis of this measure reveals the exact service calls that were generated by the web parts and the duration of each service call. Slow service calls can thus be identified.
Total service call duration	Indicates the total time taken by the web parts in this web site to generate service calls.	Secs	If the value of the *Duration* measure is abnormally high, then compare the value of this measure with that of the *Total CPU duration* and *Total SQL duration* measures

Measurement	Description	Measurement Unit	Interpretation
			to determine the accurate source of the slowness - is it because of processing delays in the web parts? Is it because the web parts took too long to generate service calls? Or is it owing to inefficient queries run by the web parts? If service calls are delaying web part operations, use the detailed diagnosis of the *Service calls* measure to identify those service calls that were taking too long to generate and execute.

Use the detailed diagnosis of the *Duration* measure to know the details of requests that were processed slowly by the web parts in a web site. From these details, you can figure out the start time of each request, from which user the request was received, from which client the user connected to the web site, and on which server the web site was operating.

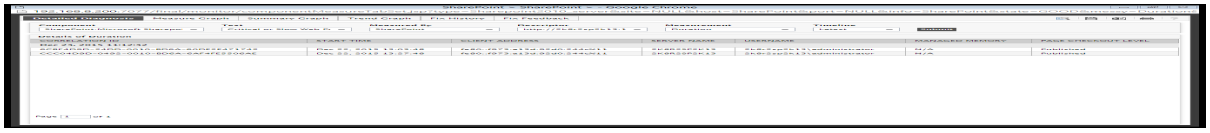


Figure 6.55: The detailed diagnosis of the Duration measure

Use the detailed diagnosis of the SQL queries measure to know which queries were run and the duration of each query. This way, long running queries can be identified.

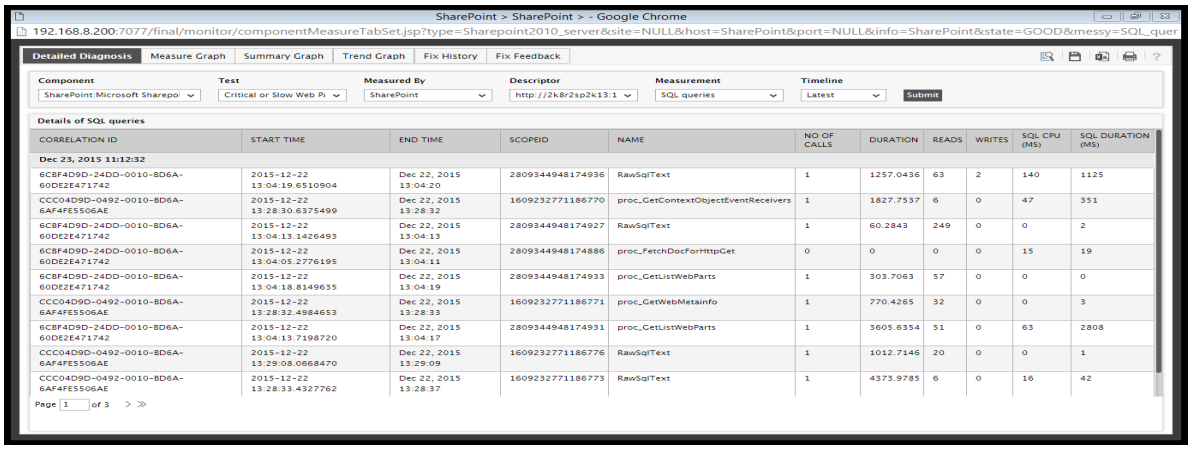


Figure 6.56: The detailed diagnosis of the SQL queries measure

The detailed diagnosis of the SharePoint requests measure reveals the URLs of the SharePoint requests and the processing time of each request. Requests for which the web parts in a web site took too long to respond can be isolated in this manner.

Figure 6.57: The detailed diagnosis of the SharePoint requests measure

The detailed diagnosis of the Service calls measure reveals the exact service calls that were generated by the web parts and the duration of each service call. Slow service calls can thus be identified.

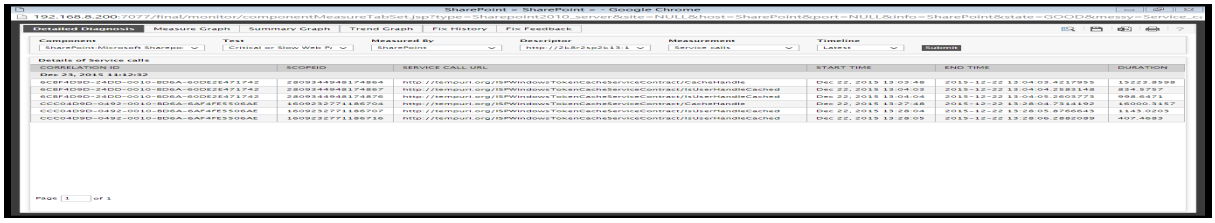


Figure 6.58: The detailed diagnosis of the Service calls measure

6.6.6.1 Enabling the SharePoint Developer Dashboard

The Developer Dashboard is to help developers/ administrators with logging and debugging custom components that are added to SharePoint pages. It uses a simple process of elimination to isolate

which component in a SharePoint page is the root cause for the slow performance. Developer Dashboard provides details on

- How long it took threads to process
- Details on the quantity and execution duration of SQL Server database calls and
- Details on Windows Communication Foundation (WCF) service calls
- Details on the URL
- Current user
- Load time etc.,

The **Developer Dashboard** can be turned on or enabled for an entire farm to get a snapshot of the activity and performance of a specific page request.

To enable this dashboard, run the following commands from the SharePoint management shell:

```
$content = ([Microsoft.SharePoint.Administration.SPWebService]::ContentService)
```

```
$appsetting =$content.DeveloperDashboardSettings
```

```
$appsetting.DisplayLevel =
[Microsoft.SharePoint.Administration.SPDeveloperDashboardLevel]::On
```

```
$appsetting.Update()
```

7

Chapter 7: Conclusion

This document has described in detail the monitoring paradigm used and the measurement capabilities of the eG Enterprise suite of products with respect to **Microsoft SharePoint**. For details of how to administer and use the eG Enterprise suite of products, refer to the user manuals.

We will be adding new measurement capabilities into the future versions of the eG Enterprise suite. If you can identify new capabilities that you would like us to incorporate in the eG Enterprise suite of products, please contact support@eginnovations.com. We look forward to your support and cooperation. Any feedback regarding this manual or any other aspects of the eG Enterprise suite can be forwarded to feedback@eginnovations.com.