Monitoring MSDynamix CRM 2011

eG Enterprise v6

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Monitoring MS Dynamics CRM 2011 server

Microsoft Dynamics CRM delivers several key capabilities and features that can be leveraged by organizations across a wide range of industry segments as well as solution providers that are market leaders within industry verticals they specialize in. These include:

- End-to-end CRM functional modules including Sales Force automation, Customer Service Automation, and Marketing Automation.
- Integration tools that spans line-of-business applications across the enterprise.
- Comprehensive business intelligence and analytics tools for business management and risk and compliance reporting.
- Centralized store of all information, reports, communications, portfolio, performance in one easy-to-access location.

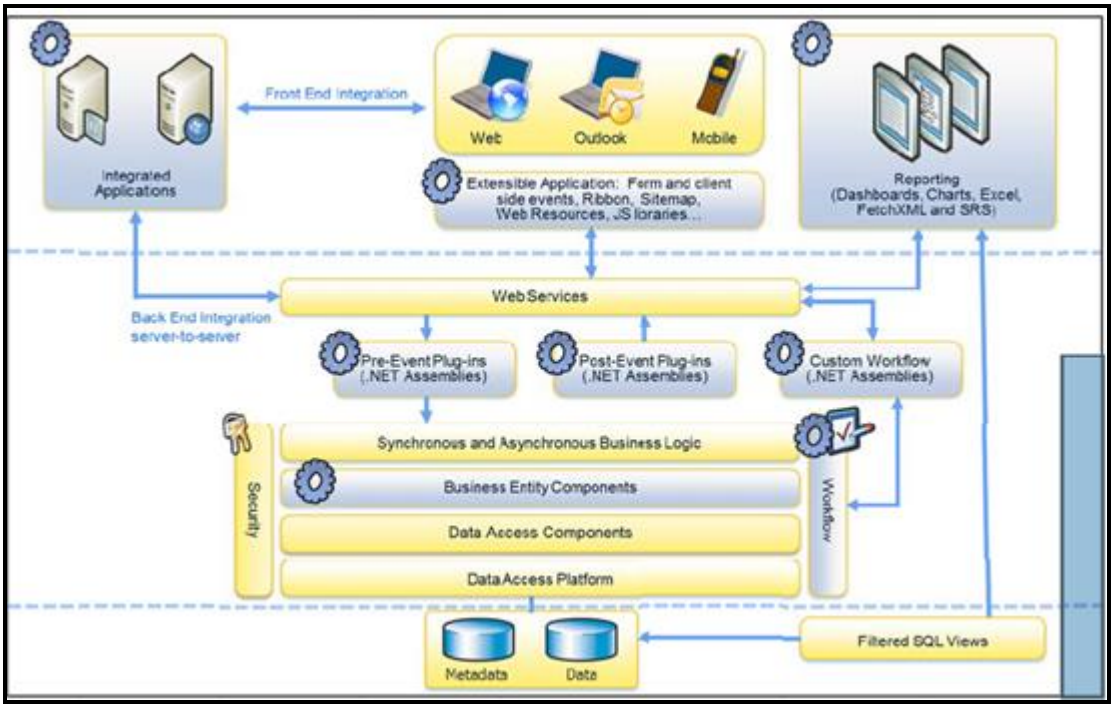

Figure 1: The System architecture of MSDynamics CRM 2011 server

The system application architecture as shown in Figure 1 is described using the technical capabilities provided by the platform for developing solutions. This maps the logical elements of a Web application to a typical CRM application.

eG Enterprise provides a specialized *MSDynamics CRM2011* monitoring model that reports the following key statistics that aid the administrators to identify the efficiency and performance of the server:

- The number of unsuccessful authentication requests made to the server;
- The number of authentication requests that were processed;
- The number of authentication requests that failed to process;
- How many authentication requests were processed/failed to process when processed using the authentication credentials of the Microsoft account, claim based authentication etc.,
- How many email incoming email messages in theis email router instance were potentially corrupted?;
- How many incoming email messages were not delivered successfully?;
- How many times the email router service sonfiguration was refreshed?;
- Was there a glitch in loading the service provider? If so, how many times the service provider did not load on the email router instance?;
- The total number of cache flush requests that were successfully received for the locator service;
- How many router requests that actually timed out?;
- How many requests were actually received by the router?;
- Worker processes related metrics such as the total CPU usage, memory usage and handles;
- The organizations on which the worker processes are active;
- How many SDK requests are received and the number of SDK requests that failed to process;
- How many requests are received by each web service?;
- The percentage of requests that failed;
- How many metadata requests are received on each web service? etc.,

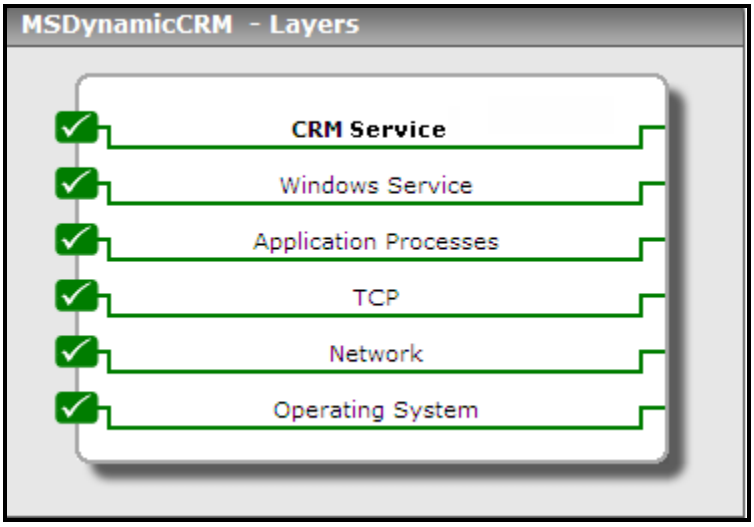

Figure 2: The layer model of the MSDynamics CRM2011 server

The **Operating System**, **Network**, **Tcp** and **Application Processes** layers of the MSDynamics CRM2011 server model are similar to that of a *Windows Generic* server model. Since these tests have been dealt with in the *Monitoring Unix and Windows Servers* document, Section 1.1 focuses on the **CRM Service** layer.

1.1 The CRM Service Layer

This layer tracks the performance of the authentication requests when processed through Active Directory authentication and claim based authentication, provides you with detailed insight on the Email router by tracing the incoming/outgoing email messages and how well the email messages are processed? In addition, this layer tracks the performance of the sandbox environment and the efficiency of the web services to process the requests in the MS Dynamics CRM 2011 server.

Figure 3: The tests mapped to the CRM Service layer

1.1.1 CRM Authentication Test

Microsoft Dynamics CRM supports two security models for authentication: claims-based authentication and Active Directory authentication. The type of authentication used depends on the type of deployment your application is accessing: Microsoft Dynamics CRM Online or Microsoft Dynamics CRM 2011.

In large environments where both types of deployments are in vogue, it becomes imminent to identify the security model that plays a major role in authentication.This is where the **CRM Authentication** test helps! This test reveals the numerical statistics of the following:

- The authentication requests that were unsuccessful
- The authentication requests that were processed per minute
- The authentication requests that failed when processed using the active directory authentication credentials, Windows Live ID, claim based authentication respectively
- The authentication requests that were processed using the active directory authentication credentials, Windows Live ID, laim based authentication respectively.
- The authentication requests that were processed using the MSCRM_CONFIG database.

Purpose	Reveals the numerical statistics of the following: ➢ The authentication requests that were unsuccessful ➢ The authentication requests that were processed per minute ➢ The authentication requests that failed when processed using the active directory

<table>
<tr><td></td><td colspan="3">authentication credentials, Windows Live ID, claim based authentication respectively
➢ The authentication requests that were processed using the active directory authentication credentials, Windows Live ID, laim based authentication respectively.
➢ The authentication requests that were processed using the MSCRM_CONFIG database.</td></tr>
<tr><td>Target of the test</td><td colspan="3">A MSDynamics CRM2011 server</td></tr>
<tr><td>Agent deploying the test</td><td colspan="3">A remote agent</td></tr>
<tr><td>Configurable parameters for the test</td><td colspan="3">1. TEST PERIOD - How often should the test be executed
2. HOST - The host for which the test is to be configured.
3. PORT – The port number at which the specified HOST listens to. By default, this is NULL.</td></tr>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for each MSDynamics CRM2011 server to be monitored</td></tr>
<tr><td rowspan="4">Measurements made by the test</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
<tr><td>Windows authentication failures:
Indicates the number of unsuccessful authentication requests per minute.</td><td>Number</td><td>The authentication failure may have occurred due to various causes such as the failure in communication between the Microsoft Dynamics CRM and the Kerberos servers even though the user was successfully authenticated by the active directory, a token expiry or due to invalid user credentials. A low value is desired for this measure. A high value of this measure may indicate that either the server is possibly under a Denial of Service attack or there is a problem with the Authentication service configuration.</td></tr>
<tr><td>Windows authentication attempts:
Indicates the total number of authentication requests that were processed per minute.</td><td>Number</td><td>The value of this measure is the sum of both successful and unsuccessful authentication requests.
This measure is a clear indicator of the load on the Microsoft Dynamics CRM server in terms of authentication requests.</td></tr>
<tr><td>Post authentication failures:
Indicates the total number of authentication requests that failed when processed using the Active Directory authentication credentials.</td><td>Number</td><td>This measure is the total value of all successful and unsuccessful authentication attempts.</td></tr>
</table>

	Post authentication attempts: Indicates the number of authentication requests that were processed using the active directory authentication credentials.	Number	
	Passport authentication failures: Indicates the number of failed authentication requests per minute that are processed using the authentication credentials of the Microsoft account i.e., the Windows Live ID.	Number	A low value is desired for this measure. A high value of this measure may indicate that either the server is possibly under a Denial of Service attack or there is a problem with the authentication service configuration.
	Passport authentication attempts: Indicates the number of authentication requests per minute that were processed using Windows Live ID authentication credentials.	Number	
	Claims authentication attempts: Indicates the number of authentication requests per minute that were processed using claim based authentication.	Number	Claims-based authentication provides an industry standard security protocol to authenticate a user on a host computer. Claims-based authentication is a set of WS-* standards describing the use of a Security Assertion Markup Language (SAML) token in either passive mode (when WS-Federation is used with the Microsoft Dynamics CRM 2011 web application) or active mode (where WS-Trust is used with Windows Communication Foundation (WCF) clients). This authentication works together with WCF to provide secure user authentication and a communication channel with a Microsoft Dynamics CRM server.
	Claims authentication failures: Indicates the number of authentication requests that failed per minute when processed using claim based authentication.	Number	
	ConfigDB windows authentication failures: Indicates the number of unsuccessful authentication requests per minute that were processed using active directory authentication credentials.	Number	A low value is desired for this measure. A high value of this measure may indicate that either the server is possibly under a Denial of Service attack or there is a problem with the authentication service configuration.

	ConfigDB windows authentication attempts: Indicates the number of authentication requests that were processed using the MSCRM_CONFIG database.	Number	The MSCRM_CONFIG database houses implementation data and other information relevant to the usage of all the databases available in the Microsoft Dynamics CRM server. The value of this measure includes both successful and unsuccessful authentication requests that were processed. This measure is a clear indicator of the load on the Microsoft Dynamics CRM server.

1.1.2 CRM E-mail Router Test

The E-mail Router is an optional interface component that integrates your e-mail system with Microsoft Dynamics CRM, and routes qualified e-mail messages to and from your Microsoft Dynamics CRM organization.

The E-mail Router enables you to configure an interface between your Microsoft Dynamics CRM deployment and one or more servers running Exchange Server, Exchange Online accounts, or POP3 servers, for incoming e-mail. For outgoing e-mail, one or more SMTP servers, Exchange Web Services (EWS), or Exchange Online accounts are supported. E-mail messages come into the Microsoft Dynamics CRM system through the E-mail Router. To constantly monitor the email messages that are passing through the Email Router, use the CRM E-mail Router test.

This test monitors the Email router of the MSDynamics CRM2011 server and reports the number of incoming email messages that are corrupted, the incoming email messages that failed during delivery and the incoming/outgoing email messages that were not delivered successfully. In addition, this test helps you to understand the performance of the email router service by providing you with the number of times the configuration of the email router service was refreshed, the number of times the service provider failed to load on the email router/failed during execution. This way the performance and efficiency of the email router can be accessed and improved!

Purpose	Monitors the Email router of the MSDynamics CRM2011 server and reports the number of incoming email messages that are corrupted, the incoming email messages that failed during delivery and the incoming/outgoing email messages that were not delivered successfully. In addition, this test helps you to understand the performance of the email router service by providing you with the number of times the configuration of the email router service was refreshed, the number of times the service provider failed to load on the email router/failed during execution.		
Target of the test	A MSDynamics CRM2011 server		
Agent deploying the test	A remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed. 2. **HOST -** The host for which the test is to be configured. 3. **PORT** – The port number at which the specified **HOST** listens to. By default, this is *NULL.*		
Outputs of the test	One set of results for the MSDynamics CRM2011 server that is to be monitored		
Measurements made by the	**Measurement**	**Measurement Unit**	**Interpretation**

test	**Corrupted incoming messages:** Indicates the number of incoming email messages of tis instance that are protentially corrupted.	Number	
	Failure incoming messages: Indicates the total number of incoming email messages that failed during delivery i.e., the mailbox access attempts for delivery of the email messages were unsuccessful.	Number	A low value is desired for this measure. A high value for this measure is a clear indication of the storage space in the recipient mail box being full. In such cases, clearing the recipient mail box for space may drastically bring down the count of this measure.
	Undelivered incoming messages: Indicates the number of incoming email messages of this instance that were not delivered successfully.	Number	A low value is desired for this measure.
	Undelivered outgoing messages: Indicates the number of outgoing email messages of this instance that were not delivered successfully.	Number	
	Service configuration refreshes: Indicates the total number of times the configuration of the email router service was refreshed on this instance.	Number	
	Service provider load failures: Indicates the total number of times the service provider could not be loaded on the email router.	Number	
	Service providers aborted: Indicates the number of times the services of the service provider was aborted due to a longer execution time.	Number	

	Service providers failed: Indicates the number of times the service provider failed during execution.	Number	Frequent failure may disrupt the overall functioning of the Microsoft Dynamics CRM organization. Therefore, the value of this emasure should be kept minimum.
	Service providers removed: Indicates the number of times the service provider was deleted from the email router service configuration and removed from the schedule.	Number	

1.1.3 CRM Locator Service Test

This test reports the number of cache flush requests that were received successfully and the number of cache flush requests that were unsuccessful for the locator service of the MSDynamics CRM2011 server.

Purpose	Reports the number of cache flush requests that were received successfully and the number of cache flush requests that were unsuccessful for the locator service of the MSDynamics CRM2011 server.		
Target of the test	A MSDynamics CRM2011 server		
Agent deploying the test	A remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST -** The host for which the test is to be configured. 3. **PORT** – The port number at which the specified **HOST** listens to.By default, this is *NULL.*		
Outputs of the test	One set of results for the MSDynamics CRM2011 server being monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Cache flush requests: Indicates the total number of cache flush requests (for the locator service) that were received successfully during the last measurement period.	Number	A high value of this measure may indicate that the caching algorithm is not optimized, or that the data is changing too frequently.

	Failed cache flush requests: Indicates the total number of cache flush requests (for the locator service) that were unsuccessful for any reason during the last measurement period.	Number	The requests may be unsuccessful due to reasons such as invalid cache entry for the request, cache may not be flushed due to incorrect cache state etc. A high value for this measure indicates a problem with the LocatorService cache, or a problem with the connection to CONFIG_DB. For information about the cause, review the event log for errors.

1.1.4 CRM Router Service Test

The Email Router Service helps you to send outgoing emails from the MSDynamics CRM2011 server.

This test reports the number of router requests that timed out, the number of requests that were routed through faulted channel, the router requests that received and the number of requests to the AppFabric that timed out. This way, the test helps you to understand whether the router service is effective in sending the email messages to the intended recipients.

Purpose	Reports the number of router requests that timed out, the number of requests that were routed through faulted channel, the router requests that received and the number of requests to the AppFabric that timed out.		
Target of the test	A MSDynamics CRM2011 server		
Agent deploying the test	A remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST -** The host for which the test is to be configured. 3. **PORT** – The port number at which the specified **HOST** listens to.By default, this is *NULL.*		
Outputs of the test	One set of results for the MSDynamics CRM2011 server that is to be monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Router request timeout: Indicates the number of requests to the router that were timed out.	Number	A low value is desired for this measure.
	Router request faulted: Indicates the number of requests made to the router through the faulted channel.	Number	

	Router request received: Indicates the total number of requests received by the router.	Number	
	AppFabric request timeout: Indicates the number of requests to the AppFabric that timed out.		AppFabric is an evolution of the Windows Process Activation service (WAS) and the Application Server role in Windows Server to host and manage WCF and WF services. As such, AppFabric is closely aligned with .NET Framework 4 and makes use of several features that are provided as part of the Framework offering key functionality such as persistence, monitoring, and hosting of WCF and WF services. AppFabric also integrates with Internet Information Services (IIS) providing management and monitoring tools within the IIS management console.

1.1.5 CRM Sandbox Host Test

Microsoft Dynamics CRM 2011 support the execution of plug-ins and custom workflow activities in an isolated environment. In this isolated environment, also known as a *sandbox*, a plug-in or custom activity can make use of the full power of the Microsoft Dynamics CRM SDK to access the organization web service. Access to the file system, system event log, certain network protocols, registry, and more is prevented in the sandbox. The sandbox environment can be used as a failover environment to the MSDynamics CRM2011 server environment.

This test monitors the sandbox environment and reports critical statistics of the following:

- The CPU, memory and handles used by all the worker processes;
- The number of active organizations;
- How well the SDK requests are received and executed and how many SDK requests failed during execution?;
- How well the incoming custom workflow activities are executed?
- How many worker processes crashed/terminated in the sandbox environment?;

This way, the administrator can clearly understand the performance of the sandbox environment using which he/she can fine-tune the real time MSDynamics CRM2011 server environment.

Purpose	Monitors the sandbox environment and reports critical statistics of the following: ➢ The CPU, memory and handles used by all the worker processes; ➢ The number of active organizations; ➢ How well the SDK requests are received and executed and how many SDK requests failed during execution?; ➢ How well the incoming custom workflow activities are executed? ➢ How many worker processes crashed/terminated in the sandbox environment?;
Target of the	A MSDynamics CRM2011 server

test			
Agent deploying the test	A remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST -** The host for which the test is to be configured. 3. **PORT** – The port number at which the specified **HOST** listens to.By default, this is *NULL.*		
Outputs of the test	One set of results for the MSDynamics CRM2011 server being monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Cpu usage: Indicates the total CPU percentage used by all the worker processes of this Sandbox host.	Percent	A low value is desired for this measure.
	Memory usage: Indicates the amount of memory used by all the worker processes of this Sandbox host.	MB	
	Handles: Indicates the total number of handles that were used by all the worker processes of this Sandbox host.	Number	
	Active organizations: Indicates the number of organizations on which the worker process of the Sandbox host is currently active.	Number	
	Execute rate: Indicates the rate at which the incoming custom workflow activities are executed on this Sandbox host.	Executes/sec	
	SDK request rate: Indicates the rate of outgoing SDK requests.	Requests/Sec	

	SDK failures: Indicates the percentage of outgoing SDK requests that failed.	Percent	
	Execute failures: Indicates the percentage of custom workflow activities that failed to execute.	Percent	
	Worker processes crashed: Indicates the percentage of worker processes that crashed in the sandbox environment.	Percent	
	Worker processes terminated: Indicates the percentage of worker processes that were terminated in the sandbox environment.	Percent	The worker processes are mainly terminated due to excessive resource usage by the worker processes or there is no response from the worker processes.
	Execute response time: Indicates the time taken to execute the incoming custom workflow activities.	Secs	A low value is desired for this measure. A gradual increase in the value of this measure is a cause of concern as this may affect the performance of the Microsoft Dynamics CRM server.
	SDK response time: Indicates the response time of the outgoing SDK requests.	Secs	
	Assembly cache usage: Indicates the percentage of total assembly cache disk space that is in use.	Percent	The global assembly cache stores assemblies specifically designated to be shared by several applications on the server.
	Concurrent plugins: Indicates the number of plugins that are executing concurrently.	Number	
	Assembly cache hits: Indicates the percentage of requests that were served from the assembly cache.	Percent	A high value is desired for this measure.

1.1.6 CRM Server Test

The Microsoft CRM SDK includes two Web services:

CRM Web Service (CrmService.asmx)

- Provides strongly typed access to all entities in Microsoft CRM, including custom entities and attributes.
- Allows execution of all supported operations, including those with built-in business logic as well as specialized operations.
- Provides a valid Web Services Description Language (WSDL) that is dynamically generated on the server to include the latest customizations.
- Provides a single endpoint for your code.

Metadata Web Service (MetadataService.asmx)

- Allows access to Microsoft CRM metadata.
- Provides strongly typed metadata classes.

This test auto discovers the web services of the MSDynamics CRM2011 environment and reports the total requests and metadata requests received, the percentage of requests and metadata requests that failed. In addition, this test reports the number of render requests and the requests that failed to materialize. Using this test, administrators can easily assess the efficiency of the web service by analyzing the time spent by each web service in responding to requests in the environment as well as from the CRM components.

Purpose	Auto discovers the web services of the MSDynamics CRM2011 environment and reports the total requests and metadata requests received, the percentage of requests and metadata requests that failed. In addition, this test reports the number of render requests and the requests that failed to materialize. Using this test, administrators can easily assess the efficiency of the web service by analyzing the time spent by each web service in responding to requests in the environment as well as from the CRM components.		
Target of the test	A MSDynamics CRM2011 server		
Agent deploying the test	A remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST -** The host for which the test is to be configured. 3. **PORT** – The port number at which the specified **HOST** listens to.By default, this is *NULL.*		
Outputs of the test	One set of results for each web service being monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Organization service requests: Indicates the total number of requests received by this web service during the last measurement period.	Number	This measure displays the count of both successful and unsuccessful requests.

	Failed organization service requests: Indicates the percentage of requests that failed for this web service during the last measurement period.	Percent	This measure is the ratio of the total number of requests that failed to the total number of requests that were received by the web service.
	Organization service metadata requests: Indicates the total number of metadata requests received by this web service during the last measurement period.	Number	The term metadata refers to the "data about data" and is a concept utilized by Microsoft Dynamics CRM extensively to store the data for all form modifications, including client-side code and for other entities such as the site map. This measure displays the count of both successful and unsuccessful metadata requests.
	Failed organization service metadata requests: Indicates the percentage of metadata requests that failed for this web service during the last measurement period.	Percent	This measure is the ratio of the total number of metadata requests that failed to the total number of metadata requests received by the web service. This measure displays the count of both successful and unsuccessful metadata requests.
	Internal organization service requests: Indicates the total number of requests received by Microsoft Dynamics CRM In Proc calls that are made by applications that use the methods described in the Microsoft Dynamics CRM SDK during the last measurement period.	Number	
	Failed internal organization service requests: Indicates the percentage of requests (received by the Microsoft Dynamics CRM InProc calls made by the applications) that failed during the last measurement period.	Percent	This measure is the ratio of the total number of web service requests that failed to the total number of requests received by the Microsoft Dynamics CRM InProc calls made by the applications.

	Report render requests: Indicates the total number of requests that render Microsoft SQL server reporting services reports during the last measurement period.	Number	
	Failed report render requests: Indicates the ratio of requests rendering reports that failed to the total number of requests rendering Microsoft SQL server reporting services reports during the last measurement period.	Percent	
	Script error reports: Indicates the total number of error reports generated by the web client and the Microsoft Dynamics CRM for Outlook.	Percent	This measure is reset to zero on a weekly basis. This measure is an indicator of high script error frequency. A high value for this measure within a short period of time is a cause of concern for the administrator who immediately investigates the pages that are producing errors in the Microsoft Dynamics CRM .
	Time spent in organization service requests: Indicates the total time spent by the Microsoft Dynamics CRM Organization Web Service processing requests.	Secs	The value of this measure includes both successful and unsuccessful requests that were being processed by the web service.
	Time spent in internal organization service requests: Indicates the total time spent by the Microsoft Dynamics CRM Organization Web Service processing requests from the CRM components.	Secs	The value of this measure includes both successful and unsuccessful requests that were being processed by the web service.
	Time spent in organization service metadata requests: Indicates the total time taken by the Microsoft Dynamics CRM Organization Web Service processing metadata requests.	Secs	The value of this measure includes both successful and unsuccessful metadata requests.

	Active organizations: Indicates the number of organization that are currently active.	Number	

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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 the **MS Dynamics CRM 2011 Server**. 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.