Monitoring Microsoft Dynamics CRM

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

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.

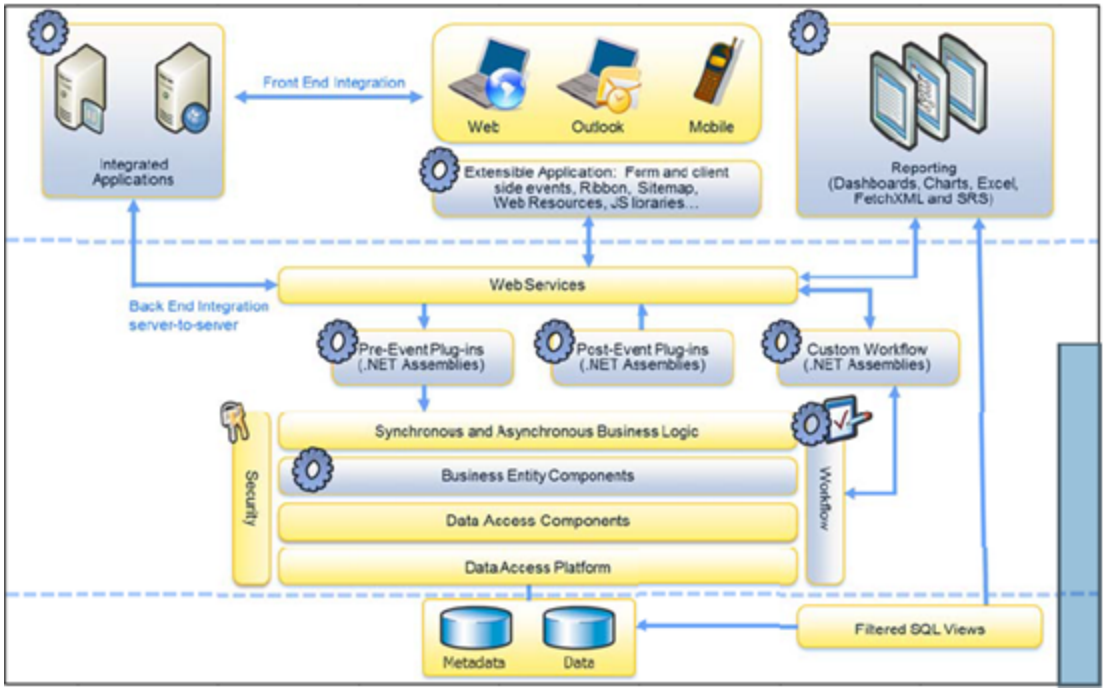

Figure 1.1: The System architecture of MSDynamics CRM 2011 server

The system application architecture 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.

Chapter 2: How to Monitor Microsoft Dynamics CRM Server Using eG Enterprise ?

eG Enterprise monitors the Microsoft Dynamics CRM server in an agentless manner. All that is required for this is a single eG agent on any remote Windows host in the environment. This agent is capable of monitoring the performance of the server. To start monitoring the server, first manage the Microsoft Dynamics CRM server component using eG administrative interface. The steps for achieving the same are explained in the below section.

2.1 Managing the Microsoft Dynamics CRM server

The eG Enterprise cannot automatically discover the Microsoft Dynamics CRM server. This implies that you need to manually add the component for monitoring. Remember that the eG Enterprise automatically manages the components that are added manually. To manage a Microsoft Dynamics CRM server component, do the following:

1. Log into the eG administrative interface.
2. Follow the Components -> Add/Modify menu sequence in the **Infrastructure** tile of the **Admin** menu.
3. In the **COMPONENT** page that appears next, select *Microsoft Dynamics CRM* as the **Component type**. Then, click the **Add New Component** button. This will invoke Chapter 2.

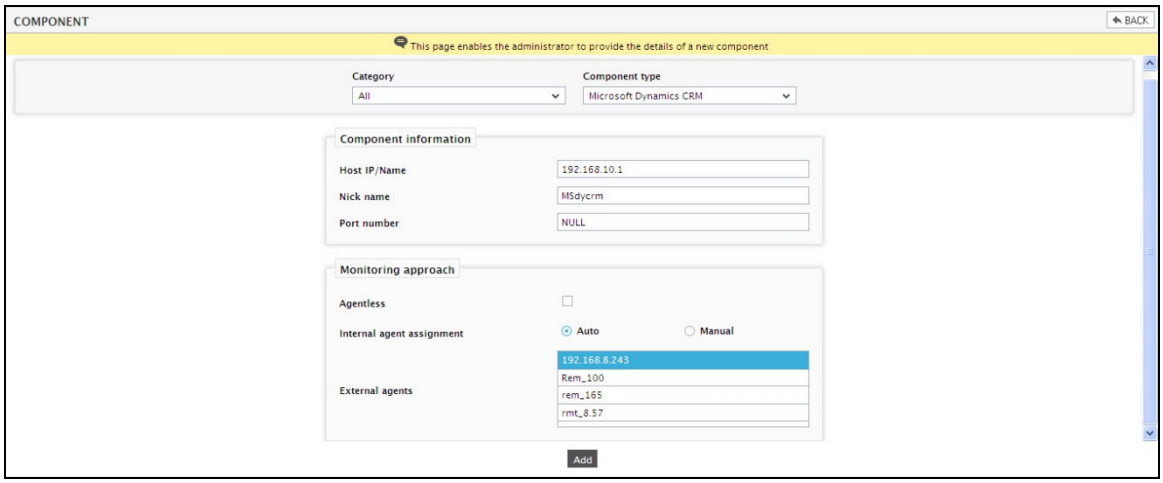

Figure 2.1: Adding the Microsoft Dynamics CRM server

4. Specify the **Host IP/Name** and the **Nick name** of the Microsoft Dynamics CRM server in Chapter 2. Then, click on the **Add** button to register the changes.
5. Next, try to signout of the eG administrative interface, now you will be prompted to configure the **Processes** test. To know the details on configuring this test, refer to the *Monitoring Windows and Unix* document.
6. Finally, signout of the eG administrative interface.

2.2 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 Microsoft Dynamics CRM 2011 server.

Figure 2.2: The tests mapped to the CRM Service layer

2.2.1 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.

Target of the test : A Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for each Microsoft Dynamics CRM 2011 server to be 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Windows authentication failures	Indicates the number of unsuccessful authentication requests per minute.	Number	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

Measurement	Description	Measurement Unit	Interpretation
			Service attack or there is a problem with the Authentication service configuration.
Windows authentication attempts	Indicates the total number of authentication requests that were processed per minute.	Number	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.
Post authentication failures	Indicates the total number of authentication requests that failed when processed using the Active Directory authentication credentials.	Number	This measure is the total value of all successful and unsuccessful authentication attempts.
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	Number	Claims-based authentication provides an industry standard security protocol to authenticate a user on a host

Measurement	Description	Measurement Unit	Interpretation
	based authentication.		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.

2.2.2 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 Microsoft Dynamics CRM 2011 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!

Target of the test : A Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for the Microsoft Dynamics CRM 2011 server to be 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Corrupted incoming messages	Indicates the number of incoming email messages of this instance that are potentially 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	Indicates the number of	Number	Frequent failure may disrupt the

Measurement	Description	Measurement Unit	Interpretation
failed	times the service provider failed during execution.		overall functioning of the Microsoft Dynamics CRM organization. Therefore, the value of this measure 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	

2.2.3 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 Microsoft Dynamics CRM 2011 server.

Target of the test : A Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for the Microsoft Dynamics CRM 2011 server to be 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Cache flush requests	Indicates the total number of cache flush requests (for the locator service) that were received	Number	A high value of this measure may indicate that the caching algorithm is not optimized, or that the data is changing too frequently.

Measurement	Description	Measurement Unit	Interpretation
	successfully during the last measurement period.		
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.

2.2.4 CRM Router Service Test

The Email Router Service helps you to send outgoing emails from the Microsoft Dynamics CRM 2011 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.

Target of the test : A Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for the Microsoft Dynamics CRM 2011 server to be 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	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.

2.2.5 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 Microsoft Dynamics CRM 2011 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 Microsoft Dynamics CRM 2011 server environment.

Target of the test : A Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for the Microsoft Dynamics CRM 2011 server to be 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	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	Number	

Measurement	Description	Measurement Unit	Interpretation
	by all the worker processes of this Sandbox host.		
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

Measurement	Description	Measurement Unit	Interpretation
			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.

2.2.6 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 Microsoft Dynamics CRM 2011 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 Microsoft Dynamics CRM 2011 Server

Agent deploying the test : A remote agent

Outputs of the test : One set of results for each web service 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 number at which the specified host listens to. By default, this is *NULL*.

Measurements made by the test

Measurement	Description	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.

Measurement	Description	Measurement Unit	Interpretation
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	Percent	

Measurement	Description	Measurement Unit	Interpretation
	measurement period.		
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	

Chapter 3: 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 **Microsoft 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.