Oracle® Enterprise Manager

System Monitoring Plug-in for Microsoft SQL Server User's Guide Release 12.1.0.6.0 for Windows E35211-13

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Oracle Enterprise Manager System Monitoring Plug-in for Microsoft SQL Server User's Guide, Release 12.1.0.6.0 for Windows

E35211-13

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Preface

This document provides a description about the Oracle System Monitoring plug-in for Microsoft SQL Server, details on the versions the plug-in supports, prerequisites for installing the plug-in, and step-by-step instructions on how to download, install, verify, and validate the plug-in.

Audience

This document is intended systems and database administrators tasked with monitoring Microsoft SQL Server through Enterprise Manager Cloud Control.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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Related Documents

For information about the troubleshooting scenarios that you might encounter while working with the System Monitoring plug-ins, see the *Oracle*® *Enterprise Manager System Monitoring Plug-in Troubleshooting Guide for Third-Party Database Plug-ins*:

http://docs.oracle.com/cd/E24628_01/em.121/e35212/toc.htm

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

Convention	Meaning
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's Changed

This table provides a brief overview of the document changes for the latest publication of the *Oracle Enterprise Manager System Monitoring Plug-in Installation Guide for Microsoft SQL Server*:

Part Number	Change Summary
E35211-13	Corrected to the file names of the JDBC files provided. See Added Support for Microsoft SQL Server 2014.
E35211-12	Updated with new features. See What's New in This Release for more information.
	Updated Prerequisites to include new patch requirements.
	Added new content for Adding Targets with EMCLI.
	Updated the Using the Backup and Restore Jobs section.
	Added new content for Deploying Reports After BI Publisher is Configured.
	Updated the Using the Microsoft SQL Server Plug-in Reports section.
	Added new content for Chargeback Functionality.
	Added new content for Compliance Management.
	Added new content for Inventory and Usage Details.

1

Microsoft SQL Server Plug-in Overview and Prerequisites

This chapter describes the system monitoring plug-in for Microsoft SQL Server and provides a list of available features. Review the summary of prerequisites required before configuring Microsoft SQL Server for monitoring by Oracle Enterprise Manager Cloud Control.

The following topics are provided:

- Microsoft SQL Server Plug-in Overview and Feature Summary
- What's New in This Release
- Supported Versions
- Prerequisites
- Downloading the Plug-in
- Deploying the Plug-in
- Upgrading the Plug-in
- Undeploying the Plug-in

1.1 Microsoft SQL Server Plug-in Overview and Feature Summary

The system monitoring plug-in for Microsoft SQL Server extends Oracle Enterprise Manager Cloud Control 12*c* to add support for managing Microsoft SQL Server instances. By deploying the plug-in within your Cloud Control environment, you gain the following management features:

- Monitor SQL Server instances.
- Supports both SQL Authentication and Windows Integrated Authentication.
- Gather configuration data and track configuration changes for SQL Server instances.
- Raise alerts and violations based on thresholds set on monitored metrics and configuration data.
- Provide rich out-of-box reports through Enterprise Manager's BI Publisher reports feature based on the gathered data.
- Support monitoring by a local or remote Windows Agent. Local Windows Agent is an agent running on the same host as the Microsoft SQL Server. Remote Windows Agent is an agent running on a host that is different from the host where SQL Server is running.

- Out-of-the-box monitoring templates for Microsoft SQL Server Cluster monitoring and Microsoft SQL Server AlwaysOn (HADR) monitoring.
- Oracle Enterprise Manager Jobs are made easy-to-access by being accessible from the plug-in's UI. These jobs allow for the following management of Microsoft SQL Server:
 - Backup, restore, schedule, and naming of Microsoft SQL Server database backups.
 - Start, stop, pause, and resume of SQL Server Instances.
 - Killing of sessions that are high in CPU or memory usage.
- Provide chargeback functionality for resource usage metering, consumption reports, and charge plans to define the resources to charge for and their associated rates.
- Provide compliance management to evaluate the compliance of targets and systems.
- Provide inventory and usage details for inventory summaries of your Microsoft SQL Server database.

1.2 What's New in This Release

This release of the Microsoft SQL Server plug-in for Oracle Enterprise Manager Cloud Control 12*c* includes many new features for better visibility into your Microsoft SQL Server environment. Highlighted below are some of the new features included in this release:

- Added Support for Microsoft SQL Server 2014
- Updated User Interface
- Business Intelligence Publisher Reports
- Chargeback Functionality
- SQL Server Compliance Standard

1.2.1 Added Support for Microsoft SQL Server 2014

Microsoft SQL Server plug-in for Oracle Enterprise Manager Cloud Control 12*c* supports a wide range of Microsoft SQL Server versions (Figure 1–1). This plug-in release adds support for the latest version of Microsoft SQL Server - SQL Server 2014. The plug-in supports not only standalone but also the cluster configuration of this version.

This release provides support for JDBC 4.0. The sqljdbc_auth.dll files are now prepackaged with the plug-in.

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Search											
ind Name 🗘	→										
View - 🐥 Add - 💥 Remove 🖉 Configure											
			Tourst	Incide	ate		A		ber S		is
Name	Туре	Status	Target Version		3	٨	Average Compliance Score	Sum	mary	()	
db1	Database Instance		12.1.0.1.0	0	0	0	n/a	0	0	0	
(itm-aix	IBM DB2 Database		9.7.0.2	0	3	0	n/a	0	0	0	
mssql12-c1-sql	Microsoft SQL Server	1	11.0.3128.0	0	7	0	n/a	0	0	0	
mssql14-c1	Microsoft SQL Server	1	12.0.2000.8	0	0	0	n/a	0	0	0	
nod-db105-sles11	IBM DB2 Database	1	10.5.0.3	0	3	0	n/a	0	0	0	
nod-db95-sol10	IBM DB2 Database	4	9.5.0.1	1	0	0	n/a	0	0	0	
nod-mssql12-win	Microsoft SQL Server	1	11.0.3128.0	0	2	0	n/a	0	0	0	
and monal fundaments	Microsoft SQL Server	1	9.00.1399	0	1	0	n/a	0	0	0	
o nod-mssql5-win8	Sybase Adaptive Server Enterprise	1	15.7.0	0	0	0	n/a	0	0	0	
i nod-s157-rh6			16.0	0	0	0	n/a	0			

Figure 1–1 Microsoft SQL Server Database Instances

1.2.2 Updated User Interface

The user interface has been updated to add an index page and a new link to the home page.

The home page (Figure 1–2) has been enhanced with the addition of a link in the Summary section to the all new indexes page. This enables quicker navigation throughout the plug-in.

Figure 1–2 Microsoft SQL Server Plug-in Target Home Page

Enterprise 👻 👩 Targets 👻	🖕 Eavorites 👻 🌾	History -						Search Target Name	
nod-mssql14-h1 💿								ii e	MR4-WIN8-DEV1. example.com
Microsoft SQL Server +								Page Refreshed Ap	29, 2015 10:25:17 AM EDT
Summary			Datab	bases					
SQL Server Status	🕆 Running 📒	Stop Pause		Database	Status		Size (MB)	Space Available (MB)	Space Available (%)
SQL Server Agent Status	_	Stop		ntureWorksDW2008Big	1 Online		11653.	18 46997.99	97.44
Target Up Since Database Instance Name		9:09:26 GMT-0400 20	015 mast	er	1 Online		6.3	46997.99	99.99
Server Host Name	MSSQLSERVER col14-listener	c bluemedora.localnet	mode	al de la companya de	1 Online		2.9	33 46997.99	99.99
Database Version		erprise Edition (64-bi	n msdt	•	1 Online		17.	46997.99	99.96
			seed		1 Online			4 46997.99	99.99
Database Performance	Analysis Index	es		ath	A Online		10	46007.00	00.04
lwaysOn Availability Grou			Assoc	iated Services					
SQL 2014 Servers High Avail	1 Healthy			Service	Status		Description	Start Mode	Process ID
			SQL	Browser	4 Stopped	SQL S	Server Browser	Disabled	0
			SOL	Writer	🛖 Runnina	SOL	Writer Service	Auto	1428
rocessor Load (%)			Proce	ss States			Top Proc	esses by CPU Time (ms)	
60	20, 8:00:00 pm	Apr 20, 5:00:00 am		and a constant of the second s	10 12 34 36 38 20	22 24 26 28 30		DEGICE ACMA TORIN ING COMMAND ING COMMAND ING COMMAND ING COMMAND ING COMMAND	00 460000 500000 600000 7000
ncidents and Problems							Job Activ	ity	
* Tourst	related targets	Category Al		🛢 0 🔕 6 🔺	0 🏲 0		For jobs	whose start date is within the last 7	days.
 Target Local target and 	Target	Severity	Status	Escalation level	Туре	Time Since Last		pended Executions 0	
	rargec				Incident	0 days 19 hours		roblem Executions 0	
Summary	(a)	8	New		THORNEY IS				
		8	New		Incident	0 days 18 hours	-	equired Executions 0 eduled Executions 0	

The all-new indexes page (Figure 1–3) has been added to the plug-in to give greater insight into the monitored SQL Server indexes. This includes an indexes by usage

graph and table, index fragmentation table, recommended missing indexes, and a job to create indexes.

Figure 1–3 Microsoft SQL Server Plug-in Indexes Page

RACLE [®] Enterpris	se Manager Cloud Control 12c					Setup 🕶 🔰 👔	🙎 sysman 🗸
interprise 👻 🌀 Targets 👻	👷 Eavorites 👻 📀 History 🕶				Search T	farget Name	
nod-mssql12-win_D	Bcreds_local ④					📋 nod-mssql12-win.	
Microsoft SQL Server 🔻					Pa	ge Refreshed Apr 29, 2015 10:3	4:52 AM EDT
ndex Usage							
🖲 Day 🔵 Week 🔵 M	lanth						
80							
0							
	28, 1:00:00 pm Apr 28, 3:00:00 pm	Agr 28, 5:00:08 pm Agr 28, 7:08:80 pm		11:98:98 pm Apr 25, 3 60:00 em	Apr 25, 5100-08 em Apr 25, 51		Apr 25, 9:00:08 an
Database	Object	Name	Seeks per second	Scans per second	Lookups per seo		second
msdb	sysoperators #B21F05A6	ByName		0	0.01	0	
tempdb	#BC9C9419			0		0	
tempdb	#BC9C9419			0	0	U	
ndex Fragmentation	Object	Name	Fragment Count	Average Fragmentation	(%) Average Page Space U	Jsed (%) Average Fragment	Size (Pag
MountedData	EmployeeDepartmentHistory	IX_EmployeeDepartmentHis	tory_S	1	0	0	
msdb	log_shipping_primary_databa	es uc1lsprimary_databases		0	0	0	
AdventureWorks2012	ProductModel	PK_ProductModel_ProductM	odelIC	1	0	0	1
MountedData	ShipMethod	AK_ShipMethod_Name		1	0	0	
msdb	syscollector execution log in	erna PK syscollector execution	DQ	25 10.2941176	17058822	0	5.4
lissing Indexes							
							Create In
Database	Object	Seeks per second S	cans per second Uniq	ue Compiles Equality	Columns Inequality	y Columns Included C	Jolumns
msdb	[msdb].[dbo].[syscollector_ex	0.004	0	3 [parent_log	_id], [collection_s	[log_id], [start	t_time]
msdb	[msdb].[dbo].[syscollector_ex	0.004	0	8 [collection_	set_id]	[log_id], [finis	h_time], [paci
msdb	[msdb].[dbo].[syscollector_ex	0.028	0	5 [parent_log	_id], [collection_si	[log_id], [start	t_time], [finish

1.2.3 Business Intelligence Publisher Reports

In this release Information Publisher Reports included in the previous release of the MS SQL Server Plug-in have been migrated to BI Publisher Reports. BI Publisher Reports eliminate complexity and simplify report development and maintenance.

See Using Reports and Monitoring Templates for more information on using these reports.

1.2.4 Chargeback Functionality

New to this version is Chargeback functionality (Figure 1–4). Chargeback allows users to gather data on resource use, allocate charges for the use of these resources, and present the results in an intelligible format. Using Chargeback assists consumers in monitoring and controlling their IT costs.

Enterprise 👻 🙆 Targets 👻 🏫 Eavorites 👻 😋 Histor	/ -		Search Target Name	
argeback			🕑 📑 Page Refreshed A	pr 29, 2015 9:38:18 AM EDT
Oracy Plans Cost Certers Entitie Report Getting Started Cost Darpeback combiles you to meter Enterprise Nanoger resources (Entities) and allocate charges to Cost Centes socialated based on the metrics and rates defined in a charge Plan. Starte Certers Corfigure Corrigon Plans Start of Chargeback consists of three starts: - Configure Corrigon Plans Configure Corrigon Plans Configure Corrigon Plans - Configure Corrigon Plans/Cost Center subgrowthered, Chargeback coalects usage and reports detailing consumption and the associated charges through a number of different interfaces.	Charge Plan Setup Coligues Contigues Contigues Add Cost Add Cost Add Cost	ities Setup leaf Service Zone dd Gef Service Zones Other Entities Cher Entities Assign Charge Flan - Assign Charge Flan	Data If not Collection Job (automated daily run serv	using LDAP, gn new self sst Center
Data Collection Problems Settings Next Collection Time Aor 30, 2015 8:00 AM UTC Last Run Dute Apr 29, 2015 8:00 AM UTC Last Run Duration 1 min 2 second 1.4 1.2 0.0	- Duration	Charge Trend 300 250 200 4* 150 100 50	н	Cost Center Default Cost Center

Figure 1–4 Microsoft SQL Server Plug-in Chargeback Funtionality

For more information on how to implement Chargeback services, see the *Oracle Enterprise Manager Cloud Administration Guide*:

http://docs.oracle.com/cd/E24628_01/doc.121/e28814/chargeback_cloud_ admin.htm#EMCL0917

1.2.5 SQL Server Compliance Standard

Another new feature in this release is the Microsoft SQL Server Compliance Standard (Figure 1–5). Associating a Compliance Standard with targets allows an administrator to track and monitor the adherence of managed targets. This will assist in revealing the least compliant targets, so measures can be taken to correct them.

Figure 1–5 SQL Server Configuration Compliance Standard

🖁 Enterprise 👻 💿 Targets 👻 🐈 Eavi	orites 👻 🥝 Hist <u>o</u> r	/ -					Search Target Nam	e		
ompliance Results							Page Refrest	ned Ma	ay 11, 2015 1:45:20 AM EDT	тС
ompliance Results > SQL Server Configur	ation Compliance St	andard								
SQL Server Configuration Co	mpliance Stan	dard								
SQL Server Configuration Complian	SQL Server (Configuration	Compliance Standar	d (Con	nplianc	e Stan	dard)			
 Maximum Degree of Parallelism Disable xp_cmdshell 	Summary Tr	end Overview Vie	olations							
 Disable CLR Maximum Worker Threads 	Target Scored	ard	Rule Evaluations							
A Rebuild Index A Reorganize Index A Reorganize Index Extra Transaction Log Files A Transaction Log Backed Up Databases Backed Up Set Maximum Memory Agent Starts Automatically	Targe	1 ots By Severity	Compliant Critical Warning Error	Ru	le Evalua	9 tions	Compliant Critical Warning Minor Warning Error			
	Result By Tar	get Result By Co	mpliance Standard Rule							
	Target Name		Required Data Available	Viol	ations			Score	(%) Last Evaluation Date	
	mssq14-h1-AO	_remote_DBC	Yes	0	26 43				98 May 6, 2015	

For more information on how to implement Compliance Standards to targets, see the *Oracle Enterprise Manager Cloud Control Oracle Database Compliance Standards Guide*:

http://docs.oracle.com/cd/E24628_01/doc.121/e36074/db_comp_intro.htm#EMDBC108

1.3 Supported Versions

This plug-in supports the following versions of products:

- Enterprise Manager Cloud Control 12c Release 4 (12.1.0.4.0) or higher (Oracle Management Server and Oracle Management Agent).
- Standard, Enterprise, and Workgroup editions of Microsoft SQL Server 2005, Microsoft SQL Server 2008, Microsoft SQL Server 2012, and Microsoft SQL Server 2014 as detailed below:
 - Microsoft SQL Server 2005 (32-bit or 64-bit).
 - Microsoft SQL Server 2008 (32-bit or 64-bit).
 - Microsoft SQL Server 2008 R2 (32-bit or 64-bit) including Failover Cluster support.
 - Microsoft SQL Server 2012 (32-bit or 64-bit) including Failover Cluster and AlwaysOn Availability Groups support.
 - Microsoft SQL Server 2014 (32-bit or 64-bit) including Failover Cluster and AlwaysOn Availability Groups support.

Note: Monitoring of Microsoft SQL Server Clusters are only supported with a remote monitoring configuration. The Oracle Management Agent used in monitoring cannot be installed to one of the cluster nodes.

1.4 Prerequisites

The following prerequisites must be met before you can deploy the plug-in. Patches are available from My Oracle Support (https://support.oracle.com):

- 1. Enterprise Manager Cloud Control 12*c* (Oracle Management Server and Oracle Management Agent) must be installed. Choose from:
 - Recommended: Enterprise Manager Cloud Control 12c Release 5 (12.1.0.5).
 - Enterprise Manager Cloud Control 12*c* Release 4 (12.1.0.4.0) or higher *and* install Patch 20870437 to upgrade to version 12.1.0.4.4.

To correct a deployment issue, install system patch 20645335: *On Windows Server OMS side plug-in deployment was stuck at OUI step*.

- 2. The following patches must be installed:
 - Configuration Management Patch 18140699.
 - Inventory and Usage Patch 20692416.
 - Chargeback Patch:
 - For Enterprise Manager Cloud Control 12c Release 5 (12.1.0.5.0), which contains Chargeback plug-in version 12.1.0.7.1, apply patch 21420915: *Enterprise Manager for OMS Plug-ins* 12.1.0.5.1.
 - For Enterprise Manager Cloud Control 12c Release 4 (12.1.0.4.0), which contains Chargeback plug-in version 12.1.0.6.2, apply patch 21415432: *Enterprise Manager for OMS Plug-ins* 12.1.0.4.14.

- **3.** The plug-in is only supported when running the Oracle Management Agent on 32-bit or 64-bit Windows.
- **4.** Access privileges required for non-admin System user to perform Remote Monitoring of SQL Server instance.

For more information, see Configuring Remote Connections to Monitor Targets.

- 5. Windows Management Instrumentation Service is up and running.
- **6.** Enable TCP/IP for the SQL Server instance. For more information, see Enabling and Finding TCP/IP Port Information.
- **7.** Enable SQL or Mixed Authentication on the SQL Server instance. For more information, Enabling SQL Authentication or Mixed Authentication.
- **8.** Create a suitable DB user with a sysadmin fixed server role. To monitor the SQL Server instance using non-sysadmin user, create a user with non-sysadmin role and provide the following access to it:
 - **a.** Execute this command to give access to the user:

GRANT VIEW SERVER STATE TO "login name"

- **b.** Provide database access to the user.
- c. Provide SQLAgentOperatorRole fixed database role in msdb to the user.
- **9.** Preferred credentials are set and validated on all Agents where you want to deploy the plug-in.
- **10.** The OS privileges for the user (set in the Preferred Credentials for the Agent) must meet the requirements documented in the "*Setting Credentials for the Job System to Work with Enterprise Manager*" section of the *Oracle Database Installation Guide for Microsoft Windows* available at:

http://docs.oracle.com/cd/E11882_01/install.112/e24186/postcfg.htm#BABFAEIG

Note: If you do not assign the correct privileges for users, the deployment will fail.

- 11. As part of JDBC URL, either IP Address or host name can be provided. Ensure that the host name can be resolved consistently on the network. Standard TCP tools such as nslookup and traceroute can be used to verify the host name. Validate using the following commands on Management Agent where plug-in is deployed:
 - nslookup <hostname>

This returns the IP address and fully qualified host name.

nslookup <IP>

This returns the IP address and fully qualified host name.

12. To enable the use of the Backup, Delete Backup, and Restore jobs, the following SQL commands must be processed on the monitored SQL Server database:

```
EXEC sp_configure 'show advanced options', 1
RECONFIGURE
EXEC sp_configure 'xp_cmdshell', 1
RECONFIGURE
```

1.5 Downloading the Plug-in

You can download plug-ins in online or offline mode. *Online mode* refers to an environment where you have Internet connectivity, and can download the plug-in directly through Enterprise Manager from My Oracle Support. *Offline mode* refers to an environment where you do not have Internet connectivity, or where the plug-in is not available from My Oracle Support.

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for details on downloading the plug-in in either mode:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/plugin_mngr.htm#CJGBEAHJ

1.6 Deploying the Plug-in

You can deploy the plug-in to an Oracle Management Service instance using the Enterprise Manager Cloud Control console, or using the EM Command Line Interface (EMCLI). While the console enables you to deploy one plug-in at a time, the command line interface mode enables you to deploy multiple plug-ins at a time, thus saving plug-in deployment time and downtime, if applicable.

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for instructions on deploying the plug-in:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/plugin_mngr.htm#CJGCDHFG

1.7 Upgrading the Plug-in

The Self Update feature allows you to expand Enterprise Manager's capabilities by updating Enterprise Manager components whenever new or updated features become available. Updated plug-ins are made available via the Enterprise Manager Store, an external site that is periodically checked by Enterprise Manager Cloud Control to obtain information about updates ready for download. See the *Updating Cloud Control* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for steps to update the plug-in:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/self_update.htm

1.8 Undeploying the Plug-in

See the *Managing Plug-ins* chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for steps to undeploy the plug-in:

http://docs.oracle.com/cd/E24628_01/doc.121/e24473/plugin_mngr.htm#CJGEFADI

Configure Microsoft SQL Server for Authentication

This chapter provides the instructions for configuring Microsoft SQL Server for authentication for access through Oracle Enterprise Manager Cloud Control. Starting first with enabling and finding TCP/IP port information, the chapter ends with a set of authentication configuration scenarios that you can modify for your own environment.

The following topics are provided:

- Enabling and Finding TCP/IP Port Information
- Modifying the Permissions for Database Authentication
- Enabling SQL Authentication or Mixed Authentication
- Authentication Configuration Scenarios

2.1 Enabling and Finding TCP/IP Port Information

The following sections provide information you require to enable the TCP/IP port and to find the TCP/IP port for a particular SQL server instance:

- Enabling TCP/IP Port
- Finding the TCP/IP Port

2.1.1 Enabling TCP/IP Port

1. From the SQL Server Configuration Manager, select your appropriate SQL Server Network Configuration in the left panel and navigate to the SQL Server instance.

The right panel displays all protocols for the specified SQL Server instance and their status.

- **2.** Ensure that TCP/IP is enabled.
- **3.** If TCP/IP is disabled, right-click **TCP/IP** and select **Properties.** The TCP/IP Properties dialog box appears.
- 4. In the Protocol tab, select **enabled**, and click **Apply**.
- 5. Restart the SQL Server instance.

2.1.2 Finding the TCP/IP Port

After enabling the TCP/IP protocol, restart the SQL Server to apply the changes.

From the SQL Server Configuration Manager, select the appropriate SQL Server Network Configuration in the left panel and navigate to the SQL Server instance:

The right panel displays all protocols for the specified SQL Server instance and their status.

In the **IP Addresses** tab, TCP Dynamic Ports row of IP All will give the TCP/IP port of instance.

2.2 Modifying the Permissions for Database Authentication

Modify the permissions for database authentication so that you enable SQL authentication or Windows authentication, and set sysadmin role for the database user that you are going to use for discovering the target and running jobs.

On the SQL Server, for the user you are going to use for monitoring and running jobs, set the write permissions by following these steps:

Note: If you do not have a user for Windows Authentication, then create one. To do so, from the task bar, go to **Start**, select **Settings**, and then **Control Panel**. In the Control Panel, double-click **Users and Passwords** and click **Add** in the Users tab.

 Log in to the Microsoft SQL Server Management Studio with a predefined user account, or if one was not setup for SQL authentication, use Windows Authentication (Figure 2–1):

Figure 2–1 Log In to Microsoft SQL Server

e ^j	Connect to Server	x
n Sõl Sei	r ver 2012	
Server type:	Database Engine	~
Server name:	nod-mssql12-win	~
Authentication:	Windows Authentication	~
User name:	MYCOMPAN:YAdministrator	Y
Password:		
	Remember password	
		_
Connec	ct Cancel Help Options	>>

2. Right-click Logins and select New Login... (Figure 2–2):

Object Explorer		тţХ				
Connect • 🛃 🛃	k = 🍸 🖻 🎿					
😑 🐻 nod-mssql	12-win (SQL Server 11.0.3	3128				
🕀 🚞 🕀 🕀	ses					
🖃 🚞 Security	/					
+ 	inc					
H 🗖	New Login					
+	Filter >					
+ 🗖	Start PowerShell					
÷ 📮						
+ 🖬	Reports •					
🕀 🧰 Si	Refresh					
🕀 🧰 R	Kerresh					
🗉 🛅 AlwaysOn High Availability						
🗉 🚞 Manag	🗉 🚞 Management					
🗉 📄 Integrat	tion Services Catalogs					
🗉 📆 SQL Ser	ver Agent					

Figure 2–2 New Login Menu

3. Select either **Windows authentication** and select a predefined user, or select **SQL Server authentication** to specify a new user (Figure 2–3):

Figure 2–3 Select User

8	Login -	New			X
Select a page	🔄 Script 🔻 💽 Help				
ig™ Server Roles © Ueer Mapping Securables ∰ Status	Login name: Windows authentication SQL Server authentication Password: Confirm password: Specify old password Old password: Friforce password policy Friforce password policy User must change passw Mapped to certificate Mapped to asymmetric key	ation	INOEM_Used	Sea	rch
Connection	Map to Credential			~ A	dd
Server: nod-mssql12-win Connection: MYCOMPANYAdministrator 뤧 View connection properties	Mapped Credentials	Credential	Provider		
Progress				Ren	nove
Ready	Default database: Default language:	master <default></default>		* *	

4. Under the Server Roles page, click the check box for the **sysadmin** server role (Figure 2–4):

E.	Login Properties - NOD-MSSQL12-WIN\OEM_User
Select a page	🖾 Script 🔻 🚺 Help
General Server Roles User Mapping Securables Status	Server role is used to grant server-wide security privleges to a user.
	 bukadmin dorestor dskadmin procesadmin gecuntyadmin serveadmin setupadmin setupadmin
Connection	
Server: nod-mssql12-win Connection: MYCOMPANYAdministrator Wew connection properties	
Progress	
Ready	
	OK Cancel

Figure 2–4 Select sysadmin Server Role

5. Click OK.

2.3 Enabling SQL Authentication or Mixed Authentication

- 1. Log in to the Microsoft SQL Server Management Studio with a predefined user account, or if one was not set up for SQL authentication, use Windows Authentication.
- 2. Right-click the server you wish to modify and then click **Properties**.
- **3.** Select the **Security Page**.
- 4. Under the Server authentication heading choose either the desired authentication: Windows Authentication or SQL Server and Windows Authentication mode.
- 5. Click OK.
- **6.** At this point the SQL server must be restarted. To do so, right-click the server you have just modified and select **Restart**.
- 7. If SQL Server Agent is running, it must also be restarted.

2.4 Authentication Configuration Scenarios

The examples listed below describe supported configuration details for Microsoft SQL Server. Follow the examples and choose the configuration options best suited for your environment.

- Local monitoring with SQL Authentication
- Local monitoring with Windows Integrated Authentication (WIA)
- Remote monitoring with SQL Authentication
- Remote monitoring with Windows Integrated Authentication (WIA)
- Cluster remote monitoring with SQL Authentication
- Cluster remote monitoring with Windows Integrated Authentication

Note: Before proceeding with target discovery, manually verify the authentication mode used by manually logging in to the target SQL Server's management tool or request WIA/SQL Authentication credentials from the SQL Server administrator.

Example 2–1 Local monitoring with SQL Authentication

: MACHINE_1
: jdbc:sqlserver://MACHINE_1: <port></port>
: Database_Username
: Database_Password
: <blank></blank>
: <blank></blank>
: No

Database_Username can manually log in to the SQL Server management tool and be granted Sysadmin or correct SQL Server privileges.

Windows OS user is configured to run the Enterprise Manager Agent service and is granted advanced privileges.

Example 2–2 Local monitoring with Windows Integrated Authentication (WIA)

EM Agent	: MACHINE_1
JDBC URL	: jdbc:sqlserver://MACHINE_1: <port></port>
Database Username	: <blank></blank>
Password of Database User	: <blank></blank>
System Password	: <blank></blank>
System Username	: <blank></blank>
Connect Using WIA (Yes/No)	: Yes

Windows OS User can manually log in to the SQL Server management tool using WIA, is configured to run Enterprise Manager Agent service, is granted advanced privileges, and is granted Sysadmin or correct SQL Server privileges.

Example 2–3 Remote monitoring with SQL Authentication

EM Agent	: MACHINE_1
JDBC URL	: jdbc:sqlserver://MACHINE_REMOTE: <port></port>
Database Username	: Database_Username
Password of Database User	: Database_Password
System Username	: REMOTE_Windows_OS_User
System Password	: REMOTE_Windows_OS_Password
Connect Using WIA (Yes/No)	: No

Sysadmin or SQL Server privileges are granted to the Database_Username.

Advanced privileges granted to REMOTE_Windows_OS_User within the SQL Server host machine, and can log in to SQL Server host machine.

Example 2–4 Remote monitoring with Windows Integrated Authentication (WIA)

EM Agent	: MACHINE_1
JDBC URL	: jdbc:sqlserver://MACHINE_REMOTE: <port></port>
Database Username	: <blank></blank>
Password of Database User	: <blank></blank>
System Username	: REMOTE_Windows_OS_User
System Password	: REMOTE_Windows_OS_Password
Connect Using WIA (Yes/No)	: Yes

REMOTE_Windows_OS_User can log in to SQL Server host machine, can manually login to the SQL Server management tool using WIA, granted advanced privileges, granted Sysadmin or correct SQL Server privileges, and must be a Windows Domain account with access to OMA host and target database.

The host with the Oracle Management Agent (OMA) must be a member of the same Windows domain as the SQL Server host.

Example 2–5 Cluster remote monitoring with SQL Authentication

Cluster = SQLServer_Cluster	r_Hostname
Nodes = Node1_Hostname	
Node2_Hostname	
etc	
EM Agent	: ANY MACHINE
JDBC URL	: jdbc:sqlserver://SQLServer_Cluster_Hostname: <port></port>
Database Username	: Database_Username
Password of Database User	: Database_Password
System Username	: REMOTE_Windows_OS_User
System Password	: REMOTE_Windows_OS_Password
Connect Using WIA (Yes/No)	: No

Sysadmin or SQL Server privileges are granted to the Database_Username.

REMOTE_Windows_OS_User granted advanced privileges within the SQL Server nodes and can log in to SQL Server cluster hostname. Test the login by using Windows Remote Desktop.

SQLServer_Cluster_Hostname is virtual hostname or IP of the SQL Server Clustered Service and not the Windows Cluster Hostname.

Example 2–6 Cluster remote monitoring with Windows Integrated Authentication

Cluster = SQLServer_Cluster Nodes = Node1_Hostname Node2_Hostname etc	r_Hostname
EM Agent	: ANY MACHINE
JDBC URL	: jdbc:sqlserver://SQLServer_Cluster_Hostname: <port></port>
Database Username	: <blank></blank>
Password of Database User	: <blank></blank>
System Username	: REMOTE_Windows_OS_User
System Password	: REMOTE_Windows_OS_Password
Connect Using WIA (Yes/No)	: Yes

REMOTE_Windows_OS_User can log in to SQL Server cluster hostname, can manually login to the SQL Server management tool using WIA, granted advanced privileges, granted Sysadmin or correct SQL Server privileges, and must be a Windows Domain account with access to OMA host and target database.

SQLServer_Cluster_Hostname is virtual hostname or IP of the SQL Server Clustered Service and not the Windows Cluster Hostname.

Note: Where a User account requires Advanced Privileges, this includes the following Operation System rights:

- Act as part of the operating system.
- Adjust memory quotas for a process.
- Log on as batch job.
- Replace a process-level token.

The host with the Oracle Management Agent (OMA) must be a member of the same windows domain as the SQL Server host.

Discovery of the Microsoft SQL Server Target

This chapter describes how to add a Microsoft SQL Server target to Enterprise Manager Cloud Control.

The following topics are provided:

- Discovering Targets
- Verifying and Validating the Plug-in

3.1 Discovering Targets

After successfully deploying the plug-in, follow these steps to add the plug-in target to Cloud Control for central monitoring and management:

1. From the **Setup** menu, select **Add Target** and then **Add Targets Manually** as shown in Figure 3–1:

Figure 3–1 Add Targets Manually Menu

	Setup 👻 🤽 SYSMAN 🗸	\subset
Configure Auto Discovery	Add Target	۲
Auto Discovery Results	Extensibility	Þ
Add Targets Manually	Proxy Settings	Þ
Group	Security	Þ
Dynamic Group	Incidents	Þ
Administration Groups	Notifications	۲
Generic System	Provisioning and Patching	Þ
Redundancy System	My Oracle Support	Þ
Generic Service	Middleware Management	Þ
	Manage Cloud Control	▶
	Command Line Interface	
	Management Packs	►

2. In the Add Targets Manually page, select Add Targets Declaratively by Specifying Target Monitoring Properties, select Target Type as Microsoft SQL Server, select a Monitoring Agent and click Add Manually.

In the Add Microsoft SQL Server page (Figure 3–2), provide the following information for the properties:

 Target Name: Unique target name across all Cloud Control targets, such as MSSQL_Hostname. This is the display name in Cloud Control. It represents this SQL Server target across all user interfaces within Cloud Control.

Monitoring Database Host Credentials

 Target System Username (Needed when SQL Server is at remote location): Valid host user name. Required only for remote Agent monitoring. When using WIA remotely this account must be a Windows Domain account with access to the OMA host and target database. For more information, see Configuring Remote Connections to Monitor Targets. The system user name must be fully qualified. For example:

hostname.domainname.com\Administrator

- **Target System Password**: Password for the System Username. Required only for remote Agent monitoring.
- **Confirm Target System Password**: Confirm the password entered for the System Username.
- Monitoring Database Credentials
 - **Database Username** (Required for SQL Authentication): Valid user for the database in sysadmin fixed server role.
 - Database Password (Required for SQL Authentication): Corresponding password for the database user.
 - Confirm Database Password (Required for SQL Authentication): Confirm the password entered for the database user.
 - Database Role (Optional): Role assigned to the database user.
 - Confirm Database Role: Confirm database role entered for database user.
- Properties
 - Connect Using Windows Integrated Authentication (Yes/No): Select Yes for Windows Integrated Authentication, or select No for SQL Authentication.
 - JDBC Driver: (Optional) Microsoft SQL Server 2005 JDBC driver class name.

For example,

com.microsoft.sqlserver.jdbc.SQLServerDriver

- JDBC URL: URL for JDBC. It is recommended that the host name provided in the JDBC URL should be a fully qualified domain name (FQDN). The default port number for Microsoft SQL Server is 1433. You can specify either IP Address or host name. If you are monitoring a Microsoft SQL Server Cluster, then specify the IP address or host name of the virtual SQL server of the cluster (Note: this is not the same as the IP address or host name of the Windows cluster). For example:

jdbc:sqlserver://<hostname.domain.com>:<port>

You do not need to include the port number if your instance is using the default of **1433**.

Note: Specifying a Named Instance is possible for the URL of the JDBC, however consider the following when building the JDBC URL string:

- Microsoft recommend method for SQL Server hosts with multiple instances of SQL Server installed is to specify unique port numbers for each instance and only specify hostname:port for each URL string.
- Optionally, to make use of the Instance Name in the URL use the following supported URL format:

jdbc:sqlserver://hostname:port;instanceName=nameofinstance

- Building JDBC connection URLs with backslashes "\" or without the port number, is not supported by the Microsoft SQL Server plug-in.
- 3. Click Test Connection to make sure the parameters you entered are correct.

Figure 3–2 Add Microsoft SQL Server

RACLE Enterprise	
	terprise Manager by specifying target monitoring properties.
	Test Connection OK Cance
	Test Connection OK Cance
Target	
* Target Name	
	Microsoft SQL Server https://myhost1unycompany.localnet/3883/ennifinan
Monitoring Database Host	Credentials
Credential type	DBHostCreds
Target System UserName	
Target System Password	
Confirm Target System Password	
Monitoring Database Cred	lentials
Credential type	DBCreds
Database UserName	
Database Password	
Confirm Database Password	
Database Role	
Confirm Database Role	
Properties	
Connect Using Windows	
Integrated Authentication (Yes/No)	
JDBC Driver (Optional)	
* JDBC URL (Example : jdbc:sqlserver:// <host>: <pre>cort>)</pre></host>	
Global Properties	

3.2 Adding Targets with EMCLI

To add Microsoft SQL Server targets with EMCLI, use the add_target verb, as shown in Example 3–1.

You will need to specify the following options:

Target name: *-name*

It must begin with an alphabetic character contain only alphanumeric characters, multibyte characters, a space, -, _, ., :, /, (,) and have a maximum length of 256 characters.

Target type: *-type*

Always use "microsoft_sqlserver_database" (including the quotes).

Host name: *-host*

Network name of the machine running the Management Agent that is collecting data for this target instance.

Target instance properties: *-properties*

Name-value pair list of properties for the target instance. The available property names are as follows.

```
SysUserName
SysPassword
DBUserName
DBpassword
Role
dbBackupPath
WinSecurityEnabled
jdbcdriver
url
```

Properties separator delimiter: *-separator=properties*

Specify a string delimiter to use between name-value pairs for the value of the -properties option. The default separator delimiter is ";".

Properites subseparator delimiter: *-subseparator=properties*

Specify a string delimiter to use between name and value in each name-value pair for the value of the -properties option. The default subseparator delimiter is ":". For the SQL Server plug-in, it is recommended that a plus "+" sign be used.

Example 3–1 Adding Microsoft SQL Server Targets Using EMCLI

3.3 Verifying and Validating the Plug-in

After waiting a few minutes for the plug-in to start collecting data, use the following steps to verify and validate that Enterprise Manager is properly monitoring the plug-in target:

1. Click the Microsoft SQL Server target link from the All Targets page. The Microsoft SQL Server home page appears as shown in Figure 3–3:

Enterprise 👻 📀 Targets 👻 🏫 Eavorites 👻 😒 History 🕶							Search Target Nam	ne 📃		
nod-mssql12-win_DBcreds_local 🐵								📃 no	d-mssql12-win. exampl	le.com
Microsoft SQL Server +							Page Refresh	ed Apr 3	29, 2015 10:34:52 AM	M EDT
Summary	Datab	1505								
SQL Server Status 👚 Running Stop Pause		Database	Status		Size (MB)	Space Available (MB)		Space Available (%)	
SQL Server Agent Status 👚 Running Stop	Adver	tureWorks2012	1 Online			205	412	90.79		99.51
Target Up Since Mon Apr 27 10:31:12 GMT-0400 2015 Database Instance Name MSSOLSERVER	Load		1 Online			877.12	412	90.79		97.92
Server Host Name nod-mssol12-win.example.com	Mount	edData	1 Online			205.75	99	12.15		98.12
Database Version 2012 SP1 Enterprise Edition (64-bit)	maste	r	1 Online			570.12	412	90.79		98.81
Database Performance Analysis Indexes	model		1 Online			3.81	412	90.79		99.99
Decadase Performance Analysis Divexes	mode		A Online			30 R7	417	on 70		00.04
leads, Writes, and Errors (per second)	Associ	ated Services								
4		Service	Status		Descri	ption	Start Mode		Process ID	
ΛΛ	MSS	2LFDLauncher	Running	ş	SQL Server Fu	II-text Filter Daer	Manual			2854
Apr 28, 11:00:00 am Apr 28, 8:00:00 pm Apr 29, 5:00:00 am	SOLE	Irowser	🔶 Runnina	5	SOL Server Br	owser	Auto			155
rocessor Load (%)	Proces	is States				Top Proces	ses by CPU Time (ms)			
	Bac.	Beeping Iground				AND THE COMMUNICATION OF THE COMMUNICATION OF THE COMMUNICATION OF THE COMPANY OF THE COMMUNICATION OF THE COMMUNI		=	-	-
Apr 28, 11:00:00 am Apr 28, 8:00:00 pm Apr 29, 5:00:00 am		0 2 4	6 8 10 12 14	16 18 20	22 24 26		0 10000 20000 300	400	0 50000 66000 700	00 8
incidents and Problems						Job Activity	1			
* Target Local target and related targets 💌 * Category All	v (0 🙆 7 🥼	0 🏲 0			For jobs wh	ose start date is within the	last 7 d	ays.	
Summary Target Severity	Status	Escalation level	Туре	Time Since La	ist	Susper	ded Executions 0			
The outcome of Last Ri	lew	-	Incident	0 days 20 ho	urs 🔺		lem Executions 1			
The outcome of Last R:	lew		Incident	0 days 20 ho	urs 📕		ired Executions 0			
The outcome of Last Ri	iew		Incident	0 days 20 ho			ning Executions 0			

Figure 3–3 Microsoft SQL Server Target Home Page

- **2.** Verify that no metric collection errors are reported by clicking **Monitoring** and then **Metric Collection Errors** from the **Target** menu.
- **3.** Ensure that reports can be seen and no errors are reported by clicking **Information Publisher Reports** in the **Target** menu and viewing reports for the Microsoft SQL Server target type.
- 4. Ensure that configuration data can be seen by clicking **Configuration** and then **Last Collected** in the **Target** menu. If configuration data does not immediately appear, click **Refresh** in the Latest Configuration page.
- 5. View the Database Page by selecting the Microsoft SQL Server drop down under the target name and selecting Database. The database page appears (Figure 3–4). The database page contains database specific performance and configuration metrics as well as backup and restore functionality. The database will be selected from a drop-down menu.

Figure 3–4 Microsoft SQL Server Database Page

Enterprise Manag					Search Target N		👥 Sysman 🗸
nod-mssql12-win_DBcreds_ Microsoft SQL Server +	local 🔋				Page Refre	_	-win. example.com 10:34:52 AM EDT
Database Summary		Backup Management					
Database AdventureWorks2012	Y	Backup Now Schedule Backup				Restore Ba	ckup Delete Back
Status 🏦 Online			Name		Туре	Position	Size
Database ID 6		AdventureWorks2012_28-Apr-2015_03	I-23-28PM_Full.bak		Full	1	212 MB
Owner NOD-MSSQL12-WII Creation Date Oct 15 2013	N\Administrator	Test_21-Jul-2014_10-39-52AM.bak			Full	1	199 MB
C1680011 D802 042 13 2013		AdventureWorks2012_21-Jul-2014_09			Full	1	199 MB
		AdventureWorks2012_16-Jul-2014_06-	-29-24PM.bak		Full	1	199 MB
Database Composition		Database Composition Over Time (M	(B)	Space Available	: (%)		
	Total Size 206 MB Data (\$1.9%) Indexes (40.7%) Transaction Log (0.5%) Reserved but Unused (5.1%) Unallocated (1.4%) Unallocated (1.4%)	Data Data Data Data Data Data Data Data	Transaction Log Total Size sed 🔳 Unallocated	80 40 0	- Transa	able — Primary Fi ction Log Available 00 pm Apr 29, 3:00	
Physical Reads and Writes (per seco	nd)		Physical Bytes Read and Written (p	er second)			
0.08	 Reads Writes pm Apr 28, 10:00:00 pm Apr 29, 3:00 		80000 40000 0 Apr 28, 12:00:00 pm Apr 28, 5:00	-	Bytes Written		

6. View the Performance Page by selecting the **Microsoft SQL Server** drop down under the target name and selecting **Performance**. The Performance page appears (Figure 3–5). The performance page contains convenient performance graphs built from collected metrics.

Figure 3–5 Microsoft SQL Server Performance Page

ORACLE Enterprise Manager Cloud Control 12c		Setup 🕶 📔 👥 SYSMAN 👻 🔘
🚓 Enterprise 👻 💿 Targets 👻 🌟 Favorites 👻 📀 History 🕶		Search Target Name
👚 nod-mssql12-win_DBcreds_local 🐵		nod-mssql12-win.example.com
Microsoft SQL Server *		Page Refreshed Apr 29, 2015 10:34:52 AM EDT 💍
Performance History		
Process and Connection KPIs	Memory KPIs	SQL Execution KPIs
Process States	Reads, Writes, and Errors (per second)	Scans (per second)
24 18 12 6 0 Ar 28, 11:00:00 am Ar 28, 8:00:00 pm Ar 29, 5:00:00 am Logins and Logouts (per second) 0.22 0.18 0.14 0.1 0.14 0.1 0.22 0.18 0.14 0.1 0.22 0.18 0.14 0.14 0.1 0.22 0.19 0.00:00 pm Ar 28, 8:00:00 pm Ar 29, 4:00:00 am	0.16 0.12 0.04 0 Apr 29, 9:57:00 am Apr 29, 10:08:00 am Apr 29, 10:19:00 am Buffer Cache Hit Ratio (%) 80 40 0 0 40 0 0 0 0 0 0 0 0 0 0 0 0 0	36 28 20 12 4 4 Apr 29, 10:03:00 am Apr 29, 10:14:00 am Apr 29, 10:25:00 am SQL Compliations and Re-Compliations (per second) 1 0.6 0.2 Apr 28, 11:00:00 am Apr 28, 8:00:00 pm Apr 29, 5:00:00 am
Connection Utilization (%)	Average Latch Wait Time (ms)	Batch Requests (per second)
80 40 0 Apr 28, 11:00:00 am Apr 28, 8:00:00 pm Apr 29, 5:00:00 am	1.051 3.049 3.047 3.043 Apr 29, 9:48:00 am Apr 29, 10:05:00 am Apr 29, 10:22:00 am	1.6 1.2 0.8 0.4 Apr 28, 11:00:00 am Apr 28, 8:00:00 pm Apr 29, 5:00:00 am

7. View the Analysis Page by selecting the Microsoft SQL Server drop down under the target name and selecting Analysis. The Analysis page appears (Figure 3–6). The analysis page displayed SQL query and session information, as well as the "Kill Session" job button to quickly end any problematic sessions.

nterprise 👻 💿 Targets 👻 🏫 Eavorit	es 👻 🥝 History 👻					Search Target Name	
od-mssql12-win_DBcreds_	local 💿						nod-mssql12-win.example.com
ficrosoft SQL Server 👻						Page Refreshed A	lpr 29, 2015 10:34:52 AM EDT
op 5 Session Statistics							
DPU Time 💌 💿 Day	🔵 Week 🔵 Month						Kill Sess
50000		\wedge					
# 0 Apr 28, 11:00:00 am Apr	28, 2:00:00 pm	Apr 28, 5:00:00 pm	Apr 28, 8:00:00 pm	Apr 28, 11:00:00 pm	Apr 29, 2:00:00 am	Apr 29, 5:00:00 am	Apr 29, 8:00:00 am
CPU Time (ms per hour)		Session Status	Se	ssion ID	Login Name		Login Time
4672	Sleeping		65		sa	Apr 28, 02:	42:42 pm
20	Sleeping		63		58	Apr 28, 02:	39:12 pm
15	Sleeping		57		svc_sql	Apr 28, 02:	50:17 pm
12	Sleeping		59		svc_sql	Apr 28, 02:	35:12 pm
10	Sleeping		51		svc_sql	Apr 27, 09:	35:40 am
pp 5 Query Statistics Execution Count 💌 💌 Day	Week Month	Apr 28, 6:00:00 pm	Apr 28, 9:00:00 pr	n Apr 29, 12:00	00 am Apr 29, 3:00:00 am	Apr 29, 6:00:00	3 am Apr 29, 9:00:00
300 0 Apr 28, 12:00:00 pm	Apr 28, 3:00:00 pm						
					Query		
Apr 28, 12:90:00 pm	r)		e,sdf.physical_name,sdf.m	ax_size, sdf.growth,sdf.size,	Query df.is_percent_growth, FILEGROUP_1	VAME(sdf.data_space_id), FIL	.EPROPERTY(sdf.name, 'IsPrimar
0 Apr 28, 12:00:00 pm Execution Count (per hou	r) se		e,sdf.physical_name,sdf.m	ax_size, sdf.growth,sdf.size,r		NAME(sdf.data_space_id), FIL	EPROPERTY(sdf.name, 'IsPrimar
Apr 28, 12:00:00 pm Execution Count (per hou	r) se fe	iect ss.name, sdf.name, sdf.typ tch ms_crs_c1 into @name					

Figure 3–6 Microsoft SQL Server Analysis Page

8. View the indexes page by selecting the Microsoft SQL Server drop down under the target name and selecting **Indexes**. The indexes page appears (Figure 3–7). The indexes page displays metric graphs and tables about the database indexes. It also includes a Missing Indexes table that recommends indexes to be created. Click **Create Index** to create an index.

Figure 3–7 Microsoft SQL Server Index Page

Favorites + 📀 History +				Search Target Name	
				ocardin nargee name	
reds_local 0					nod-mssql12-win.example.com
				Page Refreshe	d Apr 29, 2015 10:34:52 AM EDT
h					
96-90 pm Apr 28, 3 40:00 pm Apr 2	6, 5:00:08 pm Apr 28, 7:08:80 pm	Apr 28, 5:80:00 pm Apr 28, 11:00:00 pm	Apr 28, 1 90:00 em Apr 29,	3:00:08 em Apr 25, 5:08:00 em	Apr 28, 7:00:00 am Apr 29, 9:00:01 am
Object	Name	Seeks per second	Scans per second	Lookups per second	Updates per second
sysoperators	ByName	0	0.01		
#B21F05A6		0	0	(0
#BC9C9419		0	0		0
Object	Name	Fragment Count	Average Fragmentation (%)	Average Page Space Used (%)	Average Fragment Size (Pag
EmployeeDepartmentHistory	IX_EmployeeDepartmentHistory_S	1	0		0 1
log_shipping_primary_databases	uc1lsprimary_databases	0	0		0
ProductModel	PK_ProductModel_ProductModelIC	1	0	(0 1:
ShipMethod	AK_ShipMethod_Name	1	0		0
syscollector execution log internation	PK syscollector execution log	25	10.294117647058822		0 5.44
Object See	ke ner earwyd Srane ne	r eacond Unique Com	niles Equality Columns	Tracuality Columns	Included Columns
		0			[log_id], [start_time]
	0.004	0			(log_id), [finish_time], [pack
[msdb].[dbo].[syscollector_ex	0.028	0	5 [parent_log_id], [col		[log_id], [start_time], [finish
	REam Ar 2, 3 50/8 pr 4/2 2 9/300/21/05 2 #221/05A6 #200/2019 C0ject Control of the control of	Bitigen Arr 33, 36/01 pm Arr 33, 36/01 pm Arr 33, 36/01 pm Arr 33, 36/01 pm Object ByName ByName	Bittern Arr 33.5008pm Arr 35.5008pm O	Billion Arr 30.1001/pm Arr 30.1001/pm	Norm Arit.1800/pm Arit.1800/pm

Configuring Connections

This chapter provides details about configuring connections for monitoring targets and executing jobs.

The following topics are provided:

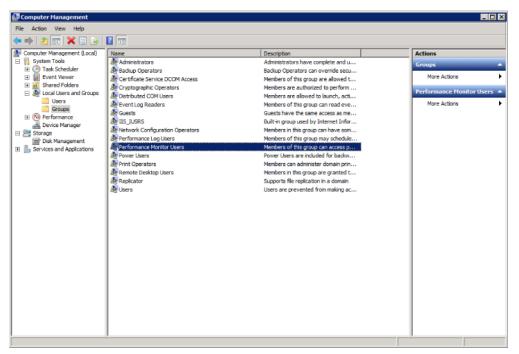
- Configuring Remote Connections to Monitor Targets
- Configuring Connections to Execute Jobs

4.1 Configuring Remote Connections to Monitor Targets

If you want to monitor targets using remote Agents, then Oracle recommends that you do the following security configurations on every system where SQL Server target resides.

- 1. Set WMI namespace security.
- 2. Restrict access to the registry from a remote computer.
- 3. Set DCOM Security to allow user to access remotely.
- **4.** Set privileges for System User to access Windows performance counters remotely as follows:
 - a. Locally on the Microsoft Windows node hosting the Agent, open the Local Security Settings Windows Tool. Go to Start, select Control Panel, and then select Administrative Tools, select Computer Management, select System Tools, then Local Users and Groups, and select Groups.)
 - **b.** Add System Username to **Performance Monitor Group** as shown in Figure 4–1:

Figure 4–1 Performance Group



- **5.** Set access privileges of SQL Server Services to allow user to access a computer remotely.
- **6.** Set privileges for System User of target on Oracle Management Agent for Windows Integrated Authentication based monitoring.
 - a. Locally on the Microsoft Windows node hosting the Agent, open the Local Security Settings Windows Tool. Go to Start, select Control Panel, and then select Administrative Tools, and select Local Security Policy.
 - b. Click on Local Policies and then User Rights Assignment.
 - c. Assign the following right to the System User of the target:

Logon as batch job

- **7.** Configure **Allow Remote Administration Exception in Windows Firewall** if Windows firewall is enabled on the SQL Server target system.
- **8.** When using WIA remotely, the OMA host must be a member of the same Windows Domain.

4.2 Configuring Connections to Execute Jobs

If you want to execute jobs using local or remote Agents, then Oracle recommends that you do the following security configurations on every system where SQL Server target resides.

- Set WMI namespace security.
- Set DCOM Security to allow user to access a computer remotely.

For configuration details, refer to the following:

Microsoft Help and Support Web site:

http://support.microsoft.com

 How To Troubleshoot Microsoft SQL Server Plug-In Issues (Document 367797.1) on My Oracle Support:

https://support.oracle.com/rs?type=doc&id=367797.1

Creating, Editing, and Using Jobs

This chapter describes how to create and edit jobs in Enterprise Manager Cloud Control for the Microsoft SQL Server.

The following topics are provided:

- Creating and Editing Jobs
- Using the Backup and Restore Jobs

5.1 Creating and Editing Jobs

To create and edit jobs, follow these steps:

- **1.** In Enterprise Manager Cloud Control 12*c*, click **Enterprise**, then **Job**, then click **Activity**.
- **2.** On the Job Activity page (Figure 5–1), select a job type from the **Create Job** menu and click **Go**.

Select one of the following:

- Microsoft SQL Server and/or SQL Agent Start
- Microsoft SQL Server and/or SQL Agent Stop
- Microsoft SQL Server Pause or Resume
- Microsoft SQL Server Kill Session
- Microsoft SQL Server Backup Database
- Microsoft SQL Server Delete Backup Database
- Microsoft SQL Server Restore Database
- Microsoft SQL Server Create Index

Figure 5–1 Microsoft SQL Server Jobs Page

ORACLE Enterprise Manager Cloud Control 12c	ORACLE Enterprise Manager Cloud Control 120 Stdp + 🔹 STSHM + 🔿									
🚓 Enterprise 👻 🗿 Targets 👻 🌟 Eavorites 👻 🔗 History 🕶				Search Target Name	÷					
nod-mssql12-win_DBcreds_local				📒 nod-mssql12-win. example.c	com ⓒ					
nod-mssql12-win_DBcreds_local > Job Activity				Page Refreshed Apr 29, 2015 10:44:18 AM EDT Auto Refresh Off	t C					
Job Activity										
Advanced Search										
Name		Job Type All		•						
Owner All 💠		Status (All 🗘								
Show jobs scheduled to start during or after the selected period.		Go Simple Search								
View Results Edit Create Like Copy To Library Suspend Resume Stop	Delete View Runs \$	Create Job Microsoft SQL Server Backup Database	\$ G0							
Select Name	Status (Executions)	Scheduled 💌	Owner	Job Type						
CREATEMISSINGINDEX_1430255065000	1 Problems	Apr 28, 2015 5:01:01 PM GMT-04:00	SYSMAN	Microsoft SQL Server Create Index						

3. In the **General** tab of the Create *<Job Type>* Job page, provide a name for the job and add the individual targets or one composite target such as a Group.

Note: If you are editing a job, then modify the job name and the selected targets.

4. In the **Parameters** tab of the Create *<Job Type>* Job page, from the **Options** menu, select an appropriate option to make the job function accordingly when it starts.

You can select one of these options as shown in Table 5–1:

Job Type	Available Options
Microsoft SQL Server and/or SQL Agent Start	Start SQL Server and SQL Server Agent services
	(You will select this option when both, SQL Server and SQL Server Agent, are stopped or when SQL Server is running but the SQL Server Agent is stopped)
	Start SQL Server service
	(You will select this option when both, SQL Server and SQL Server Agent, are stopped and if you want to start only the SQL Sever)
Microsoft SQL Server and/or SQL Agent Stop	Stop SQL Server and SQL Server Agent services.
	You will select this option:
	- When both SQL Server and SQL Server Agent are running.
	- When SQL Server is paused but the SQL Server Agent is running.
	- When SQL Server is running/paused but the SQL Server Agent is stopped.
	 Stop SQL Server Agent service.
	(You will select this option when you want to stop a running SQL Server Agent)
Microsoft SQL Server Pause or Resume	Pause SQL Server service
	(You will select this option when you want to pause a running SQL Server)
	Resume SQL Server service
	(You will select this option when you want to resume a paused SQL Server)
Microsoft SQL Server Kill Session	End a single active SQL Server user session.
	(You will select this option to end an active user session by specifying the session ID)

Table 5–1Job Parameters Options

Table 5–1	(Cont.)	Job Parameters Options
-----------	---------	------------------------

Job Type	Available Options				
Microsoft SQL Server Backup Database	• Creates a backup of the database specified by Database Name in the Parameters section of the job.				
	 Unless specified by editing the monitoring configuration of a deployed target in the Backup Path value, the database backup files will be saved to the default SQL Server backup location. The path specified must not end in a backslash. 				
	 The Backup job is also available as a button on the Database page in the Backup Management section as Backup Now. 				
	(You will select this job when you want to take a backup of the specified database.)				
	 The Backup job comes with Full or Differential backup options. 				
	 The Backup job also comes with the option to backup all databases on an instance. This option is available when creating the backup job from the Job Activity page (Figure 5–1). 				
	• This option will back up all databases except master, model, msdb, and tempdb. This requires that all databases being backed up are set to the Simple Recovery Model, or the job will fail without backing up <i>any</i> databases.				
Microsoft SQL Server Delete Backup Database	 Removes the backup file from the SQL Server by specifying Media Set ID and full path to the backup file in the Job Parameters section. 				
	 The Delete Backup job is also available as a button on the Database page in the Backup Management section as Delete. 				
	(You will select this job when you want to remove backup file that is no longer needed)				
Microsoft SQL Server Restore Database	• Restores a database from backup by specifying the full path to the backup file as well as the database name in the Job Parameters section.				
	 The Restore Database jobs is also available as a button on the Database page in the Backup Management section as Restore. 				
	(You will select this option when you want to restore a database from a backup taken using the Microsoft SQL Server Backup Database job.)				
	 The restore job may be run with a full backup file or a full backup file plus a differential backup file. 				

Cloud Control starts the SQL server and agent services according to the selection made.

5. In the **Credentials** tab of the Create *<Job Type>* Job page, select an appropriate option for credentials.

You can choose to use the preferred credentials that are already set or override the preferred credentials with new credentials. In either case, you need to provide the credentials for agent host and database host.

To set the preferred credentials, click **Preferences** at the top-right corner of the Cloud Control console. From the left-vertical navigation bar, click **Preferred Credentials**. Cloud Control displays the Preferred Credentials page. On this page, you can set the preferred credentials

- 6. In the **Schedule** tab of the Create *<Job Type>* Job page, schedule the job.
- **7.** In the **Access tab** of the Create *<Job Type>* Job page, define or modify the access you want other users to have to this job.
- 8. Click **Submit** to create the job.

Notes:

- To enable use of the Job buttons found in the Summary section of the Target home page and the Backup Management buttons found in the Database page, be sure to set the Preferred Credentials with SQL Server Authentication for the Microsoft SQL Server target type.
- Regardless of the authentication used for monitoring, the Kill Session, Backup, Delete Backup, and Restore jobs require SQL Server Authentication. To use these jobs be sure to specify credentials for SQL Server authentication.
- The Microsoft SQL Server Pause or Resume job is only supported for stand-alone Microsoft SQL Server instances. Pause of Resume Jobs submitted for Microsoft SQL Server 2005, 2008, 2012, and 2014 cluster instances will fail with the appropriate error message.

5.2 Using the Backup and Restore Jobs

To use the backup and restore jobs:

- 1. From the Targets, select All Targets, then select the Microsoft SQL Server target.
- 2. From the Microsoft SQL Server menu, select Database as shown in Figure 5–2:

Figure 5–2 Microsoft SQL Server Database Menu

ORACLE Enterprise Manager Cloud Control 12c				
🤹 Enterprise 🔻 🧿 Targets 👻 💡	🖕 <u>F</u> avorites 👻 🥝 Hist <u>o</u> ry 👻			
mssql12-c1-sql ④ Microsoft SQL Server ▼				
Home				
Monitoring	•			
Control	•			
Job Activity				
Information Publisher Reports				
Database				
Performance				
Analysis				
Indexes				
Configuration	•			
Compliance	•			
Target Setup	•			
Target Sitemap				
Target Information				

3. Use the drop down to select the database you wish to back up as shown in Figure 5–3.

Figure 5–3	Select a	Database
------------	----------	----------

Database Summary					
Database	AdventureWorks2012	~			
Status	AdventureWorks2012				
Database ID	ClusterDB				
Owner	OperationsManager				
Creation Date	OperationsManagerDW				
	master	•			

Several options are available using the Backup Management Region.

4. Click **Backup Now** to create a backup immediately (Figure 5–4).

Figure 5–4 Backup Microsoft SQL Database

Backup Management Backup Now Schedule Backup		Resto	Delete Backup
Name	Туре	Position	Size
AdventureWorks2012_22-Sep-2014_02-35-08PM.bak	Full	1	199 MB
Joe_Test_17-Jul-2014_12-50-52PM.bak	Full	1	199 MB
After_Update_16-Jul-2014_06-19-03PM.bak	Full	1	199 MB
Before_Update_16-Jul-2014_06-06-14PM.bak	Full	1	199 MB
			· · · · · · · · · · · · · · · · · · ·

If you want to give your backup a custom name, then use the **Backup Name** text box. Select either **Full** or **Differential** for the Backup Type (Figure 5–5). Click **Backup** to confirm.

Figure 5–5 Backup Type

Backup Name AdventureWorks2012 Backup Type Full Full Full	
Full	V
Differential	

When the backup is complete, it will appear in the list (Figure 5-6):

Figure 5–6 Completed Backup

ackup Management				
Backup Now Schedule Backup		Rest	ore Backup Delete Back	aup
Name	Туре	Position	Size	
AdventureWorks2012_22-Sep-2014_02-35-08PM.bak	Full	1	199 MB	4
Joe_Test_17-Jul-2014_12-50-52PM.bak	Full	1	199 MB	
After_Update_16-Jul-2014_06-19-03PM.bak	Full	1	199 MB	
Before_Update_16-Jul-2014_06-06-14PM.bak	Full	1	199 MB	
· · · · · · · · · · · · · · · · · · ·			100.113	1

- 5. You can also create a backup schedule by clicking Schedule Backup.
- **6.** Click **Yes** to confirm that you would like to go to Enterprise Manager's job creation system where you can complete the scheduling process.
- **7.** Give the Job a name (Figure 5–7):

Figure 5–7 Microsoft SQL Server Job Name

ORAC	ORACLE Enterprise Manager Cloud Control 12c						
🔹 Enterprise	🎼 Enterprise 🔻 🧿 Targets 👻 📩 Favorites 👻 🥝 History 👻						
	mssql12-c1-sql						
Create 'M	Create 'Microsoft SQL Server Backup Database' Job						
General	Parameters	Credentials	Schedule	Access			
* N	* Name Backup Load Database Schedule						
Descri	Description						
Target	Type Microsoft	SQL Server					
Target Add individual targets or one composite target, such as a Group.							
Remove Add							
Select All	Select All Select None						
Select M	Name 📥			Туре			
r	nssql12-c1-sql			Microsoft	SQL Server		

- 8. Click on **Parameters** and specify the name of the database you wish to backup.
- **9.** Optionally, you can specify a custom backup name and use the Backup Type drop down to select **Full** or **Differential**. Users also have the option to back up all user databases on the instance by selecting **True** for Backup All User Databases. Otherwise, only the specified database is backed up.
- Select or enter credentials as shown in Figure 5–8. If you've configured Preferred Credentials for the target, you can select SYSADMIN Database Credentials, Target System Credentials, and Agent Host Credentials.

Figure 5–8 Enter Credentials

ORACLE Enterprise Manager Cloud Control 12c	Setup 🕶 🏻 👥 SYSMAN 👻 🔘
🔹 Enterprise 🔻 💿 Targets 👻 🐈 Favorites 🔻 🔗 History 🕶 Search Targ	get Name 🔸
nod-mssql12-win_DBcreds_local	📋 nod-mssql12-win.example.com
Create 'Microsoft SQL Server Backup Database' Job	Cancel Save to Library Submit
General Parameters Credentials Schedule Access	
General Select global named credentials. Target instance associated credentials are not supported.	
Normal Database Credentials Credential Preferred Named New Preferred Credential Name Normal Database Credentials \$ Credential Details Credentials will be determined at runtime. Target System Credentials Credential Named New Preferred Credentials Oredential Named New Preferred Credentials Named New Preferred Credential Name Normal Database Credentials \$	
Credential Details Credentials will be determined at runtime.	
Agent Host Credentials Credential Preferred Named New Preferred Credential Name Agent Host Credentials + Credential Details Credentials will be determined at runtime.	
	Cancel Save to Library Submit

11. Use Enterprise Manager's built-in scheduling options to define the time and recurrence of the schedule as shown in Figure 5–9:

Figure 5–9 Scheduling Options

ORACLE Enterprise Manager Cloud Control 12c					
🤹 Enterprise 👻 💿 Iargets 👻 🌟 Eavorites 👻 🕑 History 👻					
mssql12-c1-sql i					
Create 'Microsoft SQL Server Backup D	atabase' Job				
General Parameters Credentials Schedule	Access				
Type One Time (Immediately) One Time	ime (Later) ORepeating				
Frequency Type Weekly \$					
Days of Week	🗹 Monday 🗌 Tuesday 📄 Wednesday 📄 Thursday 📄 Friday 📄 Saturday 📄 Sunday				
Time Zone	Time Zone (UTC-05:00) US Eastern Time (EST) \$				
Start Date	Apr 28, 2015				
Start Time	11 :17 • AM PM				
Grace Period	 Indefinite 				
	End After Hours Minutes				
Repeat Until	O Indefinite				
	Specified Date				
	Date (example: Apr 28, 2015)				
	Time : O AM PM				

12. Click Submit. The schedule will be shown in the Job Activity view (Figure 5–10).

Figure 5–10 Microsoft SQL Server Job Activity View

ORA	DRACLE: Enterprise Manager Cloud Control 12c Setup + 🔩 SYSHAN + 📿							
💰 Enterp	🛊 Enterprise + 🔘 Targetis + 🌟 Eavorities + 📀 History + Search Target Name							
Job	lob							
						Page Refreshed Apr 28, 2015 10:25:10 AM EDT 💍		
Job Ac	tivity					Auto Refresh Off \$		
	Active Name By default, results for the last 24 hours are displayed. Use 'Advance'	Go ad Search' for more options.	Advanced Search					
View Re	sults Edit Create Like Copy To Library Suspend Resume Stop	Delete View Runs	Create Job 05 Command	\$ Go				
Select	Name	Status (Executions)	Scheduled 🔻	Targets Target Type	Owner 3	lab Type		
0	SWLIBPURGE	1 Scheduled	Apr 29, 2015 2:00:00 AM GMT-04:00		SYSMAN S	Software Library Purge		
	DOWNLOAD_CVU	1 Scheduled	Apr 29, 2015 12:00:00 AM GMT-04:00		SYSMAN D	DownloadCVU		
	REFRESH_FROM_NY_ORACLE_SUPPORT_JOB	1 Scheduled	Apr 29, 2015 12:00:00 AM GMT-04:00		SYSMAN R	Refresh From My Oracle Support		
	OPATCH_PATCH_UPDATE_JOB	1 Scheduled	Apr 29, 2015 12:00:00 AM GMT-04:00		SYSMAN	OPatch Update		
	MDADCSTATUSJOB	1 Scheduled	Apr 28, 2015 3:39:00 PM GMT-04:00		SYSMAN	4DADCStatus		
	MDADATAPURGEJOB	1 Scheduled	Apr 28, 2015 3:39:00 PM GMT-04:00		SYSMAN M	4DADataMovementAndPurge		
	MDADATAMOVEMENTJOB	1 Scheduled	Apr 28, 2015 3:39:00 PM GMT-04:00		SYSMAN M	4DADataMovementAndPurge		
	SWLIBREFRESHLOCSTATS	1 Scheduled	Apr 28, 2015 3:13:17 PM GMT-04:00		SYSMAN S	Software Library Location Statistics Refresh		
0	REFRESH UPDATES FROM ORACLE	1 Scheduled	Apr 28, 2015 3:13:00 PM GMT		SYSMAN R	Refresh Updates		
	THE PARTY OF STREET, STREE		THE REAL REAL PLAN OF THE OPTIM		or on profile in the	an an abanda		

Note: You can only restore backups that meet the following criteria. The backup is:

- File backup (not tape)
- MS SQL Server knows this backup (that is, the backup is in the list of known backups, list comes from query, seen below)
- Not password protected
- Of the type 'SIMPLE'
- Not damaged

Using Reports and Monitoring Templates

This chapter describes how to use the reports and monitoring templates that the system monitoring plug-in for Microsoft SQL Server provides. Use the available out-of-the-box reports to further aid administrators with critical tasks such as problem diagnosis, trend analysis, and capacity planning. Monitoring templates simplify the task of setting up monitoring for large numbers of targets by allowing you to specify the monitoring and metric and collection settings once and applying them to many groups of targets as often as needed

The following topics are provided:

- Using the Microsoft SQL Server Plug-in Reports
- Deploying Reports After BI Publisher is Configured
- Using the Microsoft SQL Server Plug-in Monitoring Templates

6.1 Using the Microsoft SQL Server Plug-in Reports

The Microsoft SQL Server plug-in includes 12 out-of-box reports (Figure 6-1):

Figure 6–1 Microsoft SQL Server Reports

ORACLE Enterprise Manager Cloud Control 12c	Setup 🗸 \mid 👥 Sysman 🗸 🔘
🤹 Enterprise 👻 💿 Targets 👻 🌟 Favorites 👻 🥝 History 👻	Search Target Name
BI Publisher Enterprise Reports	Page Refreshed Apr 28, 2015 4:32:57 PM EDT C
Use the BI Publisher application for all operations on a BI Publisher report such as view, create, schedule, etc. Ø BI Publisher	
Enterprise Manager Reports	
The following Enterprise Manager reports are available. Click on a report to launch the BI Publisher application and directly view that rep	port.
A C Microsoft SQL Server	
Cache and Buffer	
Cluster	
Database Backups and Jobs	
Database Configuration	
Database Configuration Memory Statistics	
Performance	
Process Info and Locks	
Query Performance	
Session Performance	
Space Usage	
Statistics	
System Configuration	
A 🛅 Sybase ASE	
Configuration	
Data Cache Statistics	· · · · · · · · · · · · · · · · · · ·
Database Log Statistics Databases Space Statistics	
Deadlock Statistics	
Device IO Statistics	

To generate a new report from one of the out-of-the-box reports provided by Oracle, follow these steps:

1. From the Enterprise menu, select **Reports**, then **BI Publisher Enterprise Reports** as shown in Figure 6–2:

Figure 6–2 BI Publisher Enterprise Reports Menu



- **2.** Scroll down to the Microsoft SQL Server section, find the desired report, and click the report title hyperlink.
- **3.** After the reports have been sorted to Microsoft SQL Server reports only, find the desired report and click on the report title hyperlink.

After clicking the report title hyperlink, the desired report will generate as shown in the example in Figure 6–3:

Figure 6–3 Microsoft SQL Server BI Publisher Report Example

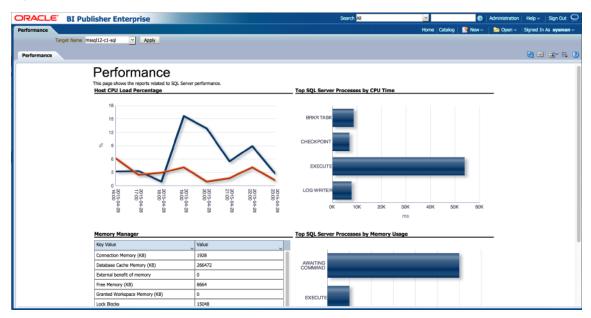


Table 6–1 shows the BI Publisher Reports that are provided by Oracle:

Report Name	Report Description
Microsoft SQL Server Database Configuration	Displays Configuration Information for the various Databases.
Microsoft SQL Server System Configuration	Displays Configuration Information for the SQL Server System.
Microsoft SQL Server Database Backups and Jobs	Displays Information about the Database Backups and Jobs.
Microsoft SQLServer Memory Statistics	Displays Information about the Memory in SQL Server.
Microsoft SQLServer Performance	Displays Information about the Performance of the SQL Server.
Microsoft SQL Server Query Performance	Displays information about the Performance of the Most Active Queries of the SQL Server.
Microsoft SQL Server Session Performance	Displays information about the Performance of the Most Active Sessions of the SQL Server.
Microsoft SQL Server Statistics	Displays Statistical Information for SQL Server.
Microsoft SQL Server Cluster	Displays Information about the SQL Server Cluster.
Microsoft SQL Server Space Usage	Displays Information about Space Usage in the Database.
Microsoft SQL Server System Process Info and Locks	Displays information about the System Processes and locks of the SQL Server.
Microsoft SQL Server System Cache and Buffer	Displays information about the System Cache and Buffer of the SQL Server.

Table 6–1 Microsoft SQL Server Plug-in Reports

6.2 Deploying Reports After BI Publisher is Configured

If the Microsoft SQL Server plug-in is deployed or upgraded after BI Publisher is already configured and the reports were not deployed automatically, then run the following command:

```
emcli deploy_bipublisher_reports -pluginid="oracle.em.smss"
-pluginversion="12.1.0.6.0" -force
```

6.3 Using the Microsoft SQL Server Plug-in Monitoring Templates

To view the out-of-box templates, from the **Enterprise** menu, select **Monitoring** and then **Monitoring Templates**. Using the Target Type drop down, select **Microsoft SQL Server** and press the arrow button.

A complete list of all out-of-box monitoring templates will be available for use as follows (also, see Figure 6–4):

- Basic MS SQL Monitoring Template Recommended basic template for monitoring SQL Server.
- Cluster Template Recommended template for monitoring errors in a clustered SQL Server environment.
- High Availability Disaster Recovery Template Recommended template for monitoring errors in a HADR (Always On) SQL Server environment.

Figure 6–4 Microsoft SQL Server Monitoring Templates

🖁 Enterprise 👻 🌀 Targets 👻 📩 Eavorites 👻	History -					Search Target Name	
Ionitoring Templates						Page Refreshed Apr 29, 2015 10:58	:13 AM EDT
Monitoring Templates can be used to apply a subs Monitoring Template remain unaffected on the tar	set of monitoring and collection settings get.	s to multiple targets. This	allows you to star	ndardize mor	nitoring across	your enterprise. When a Monitoring Template is applied to a target, any monitoring settings no	at specified in the
A Search							
Name	Target Type Microsoft SQL Server	• •					
Display Oracle Certified Templates	History of the	•					
	% Delete Acoly Compar	e Settings View Pa	st Apoly Operation	16			
Actions - View - Preate / Edit			st Apply Operation				
	X Delete Apply Compar Target Type	e Settings View Pa	st Apply Operation	Status Fai	Aborted	Description	
Actions - View - Create / Edit				Status	Aborted 0	Description Recommended basic template for monitoring SQL Server,	
Actions + View + Greate / Edit	Target Type	Ow	Pending	Status Fai	Aborted 0 0		
Actions + View + Prote Edit Name Basic MS SQL Monitoring Template	Target Type Microsoft SQL Server	Ow Sh	Pending	Status Fai	Aborted 0 0	Recommended basic template for monitoring SQL Server.	nent.
Actions • View • Create / Edit Name Basic MS SQL Monitoring Template Cluster Template	Target Type Microsoft SQL Server Microsoft SQL Server	Ow SY1 SY1	Pending 0 0	Status Fai 0	Aborted 0 0	Recommended basic template for monitoring SQL Server. Recommended template for monitoring errors in a dustared SQL Server environment.	nent.
Actions • View • Create / Edit Name Basic MS SQL Monitoring Template Cluster Template	Target Type Microsoft SQL Server Microsoft SQL Server	Ow SY1 SY1	Pending 0 0	Status Fai 0	Aborted 0 0 0	Recommended basic template for monitoring SQL Server. Recommended template for monitoring errors in a dustared SQL Server environment.	nent. Total Rows:

To apply a monitoring template to a SQL Server Target, perform the following actions:

- 1. Click the desired monitoring template to select it.
- 2. Click the Actions button and select Apply.
- **3.** Choose to either *replace* or *override* existing thresholds with the **Apply Options** option.
- **4.** Click **Add** to add the SQL Server Targets to apply the template to. Follow the prompts through the target Search and Select Targets screen.
- **5.** Click **Ok** and a confirmation message will appear at the top of the page notifying of a successful application.

The **Actions** button found on the Monitoring Templates screen will also give access to setting a selected template as "Default" for all new SQL Server Target deployments, or Edit an existing template's threshold values.

Refer to "Using Monitoring Templates" section in the *Enterprise Manger Cloud Control Administrator's Guide* for more information on how to use Monitoring Templates in Enterprise Manager 12*c*:

https://docs.oracle.com/cd/E24628_01/doc.121/e24473/mon_temp.htm#EMADM12262

7

Chargeback Functionality

This chapter provides the instructions for configuring chargeback functionality for Microsoft SQL Server.

This chapter contains the following sections:

- About Chargeback
- Chargeback Plug-in Deployment
- Configuring Global Settings for Chargeback
- Configuring a Charge Plan
- Revising Extended Charge Plans
- Configuring a Cost Center
- Configuring an Entity
- Generating and Distributing Chargeback Reports
- Additional Information

7.1 About Chargeback

Chargeback, as the name implies, is a tool of accountability. The application's primary uses can generally be described as follows:

- Provide resource usage metering by aggregating and normalizing the enormous amount of metric data Enterprise Manager collects.
- Provide IT with a means to "charge" a currency amount to the consumers of resources.
- Provide consumers with reports detailing their consumption and associated charges.

7.2 Chargeback Plug-in Deployment

In order to use the Chargeback functionality, it is necessary to deploy the Chargeback plug-in (from the **Setup** menu, select **Extensibility**, and then select **Plug-ins**).

For information on how to deploy the Chargeback Plug-in for Oracle Enterprise Manager, see the *Enterprise Manager 12c Cloud Control Metering and Chargeback White Paper*:

http://www.oracle.com/technetwork/oem/cloud-mgmt/wp-em12c-chargeback-final-1585483
.pdf

7.3 Configuring Global Settings for Chargeback

To configure the global settings for chargeback:

1. From the Enterprise menu, select Chargeback, as shown in Figure 7–1:

Figure 7–1 Chargeback Menu Item

😚 Enterprise 🗸	
Summary	
Monitoring	٠
Job	×
Reports	۲
Configuration	۲
Compliance	×
Provisioning and Patching	•
Quality Management	٠
My Oracle Support	۲
Cloud	٠
Chargeback	
Consolidation Planner	

- **2.** If you have not already configured global settings for currency symbol and uptime calculations, select the **Settings** subtab on the bottom of the **Home** tab.
 - Currency Symbol

To change the default currency (USD), click in the currency symbol text box and enter the desired currency symbol. The new selection becomes the default currency across all charge plans; that is, the universal plan and all extended charge plans. All reports, including historical reports, reflect the new currency.

Note: No rate conversion occurs when you change the currency; that is, the numbers stay the same. For example, a change from dollars to euros means that a one dollar charge becomes a one euro charge.

Uptime Calculations

Select the appropriate radio button to ignore or include uptime in charge calculations. The default is to include uptime as a consideration. Including uptime has an impact on all fixed and configuration-based charge calculations for all entities.

Chargeback prorates charges and discounts accordingly. So, for example, if an entity was available 22.5 hours in a 24-hour period, the daily charge would be adjusted 1.5 hours. A change in the uptime setting is effective from the beginning of the current report cycle, but does not impact previous report cycles; that is, charges in historical reports are not prorated based on a change made to the setting in the current cycle.

3. Click Save to update the settings.

7.4 Configuring a Charge Plan

A *charge plan* defines the resources to charge for and their associated rates. There are two types of charge plan: the *universal* charge plan and the *extended* charge plan.

The universal plan establishes rates for three basic metrics (CPU, memory, and storage). If you have not configured the universal charge plan, refer to the "Chargeback Administration" section of the *Oracle Enterprise Manager Cloud Administration Guide*:

```
http://docs.oracle.com/cd/E24628_01/doc.121/e28814/chargeback_cloud_
admin.htm#EMCL0926
```

An extended charge plan enhances the universal plan to include entity-specific metrics. It allows you to implement charges that relate to specific characteristics of an entity. The entity type determines the items for which rates can be charged.

Following the steps below to create an extended charge plan for Microsoft SQL Server:

1. From the **Charge Plans** tab, select **Create**, and then select **Plan** as shown in Figure 7–2. This will bring you to the Create Plan page.

Figure 7–2 Create Chargeback Plan

Chargeback				
Home Charge	Plans Cost Centers	Entities Reports		
🄮 Create 👻 🥖	Set Rates 💥 Delet	e 🔲 Charge Item Li	brary	
Plan		🛧 Universal Charg	e Plan: May 1, 2015 - Onwar	d
Revision		Metric	Туре	Rate
	Shanna Blan	CPU Usage	Default CPU Architecture	\$0.00 / CPU / Hour
	A tuniversal Charge Plan		Generic	\$0.00 / GB / Month
May 1, 2015 - Onward Sample Charge Plan		Storage Allocation	Generic	\$0.00 / GB / Month
> TestPlan1				

- 2. On the Create Plan page, you can name your plan at the top. In the left panel labeled "Entity Types" click Add and select Microsoft SQL Server as your Entity type.
- **3.** Next, select **Add Item** in the center menu (Figure 7–3) to add the different items you can charge for. You can choose between the following four charge items or add them all:
 - Base Charge
 - Database Base Charge
 - Disk Space Usage
 - Memory Usage

Figure 7–3 Charge Items

Chargeback				
Create Plan: Exam	ple Plan			Save Cancel
Charge Plan	Example Plan			
Effective Date	May 1, 2015 - Onwar	ď		
Entity Types		Microsoft SQL Server		
🕂 Add 💥 Remo	ve	🕂 Add Item 🥖 Edit Ite	m 💥 Remove Item 🔗 Setup Configurations	
Microsoft SQL Serve	er 🍳	Item	Default Configuration	
		roem	Charge	
		Base Charge 🕐	\$1.00 / Week 🥥	
		Database Base Charge (2)	\$50.00 / Instance / Quarter 🥥	
		Disk Space Usage (3)	\$3.00 / GB / Day 🥥	
		Memory Usage 🕐	\$ 4.00 / Month 🗘 🥥	

4. Once you have selected the types you wish to include in your Charge Plan, set the rate and frequency. You can set the frequency for each item by hour, day, week, month, quarter or year. After you have set the charge items, click **Save** located at the top right of the screen. This will bring you back to the Charge Plans tab and give you confirmation at the top of your screen (Figure 7–4) that your plan was saved. You should now see it listed in the left hand panel.

At this point you will have created a Charge Plan.

Figure 7–4 Charge Plan Confirmation

Chargeback		
Confirmation Example Plan has been saved successfully.		X
Home Charge Plans Cost Centers Entitient Y Create		
Charge Plans	Example Plan: May 1, 2015 -	Onward
View 👻 👩	Entity Type	Configurations
 Universal Charge Plan Example Plan May 1, 2015 - Onward Sample Charge Plan TestPlan1 	Microsoft SQL Server	1

7.5 Revising Extended Charge Plans

You can update an extended charge plan in the following ways:

- Make changes to the charge rates in effect for the current or a future cycle.
- Create a plan revision for the next or a later report cycle, based on an existing plan.

To make changes to the charge rates in effect for the current or a future cycle:

- 1. Select the plan revision in the navigation pane and click **Set Rates**.
- 2. Make adjustments to the charge items and rates in effect.
- 3. Click Save to update the plan revision.

Note: When changing charge rates for the current cycle, the changes are retroactive to the beginning of the cycle.

To create a plan revision for the next or a later report cycle, based on an existing plan revision:

- **1.** Select a plan in the navigation pane, and then select **Revision** from the Create menu.
- **2.** In the dialog that opens, select the effective date of the revision. The default date is the first month after the most recently added revision. For example, if the current cycle is for May and a June revision already exists, July 01 is the default effective date. Click **OK**.
- **3.** In the familiar create-like model, the configurations, charge items, and rate adjustments for the plan you selected in the navigation pane appear in the plan details table on the right.

Edit the plan details as desired:

- Add and remove entity types.
- Add and remove configurations.
- Add, change, and delete charge items.
- Make adjustments to metric rates.
- 4. When done, click **Save** to complete the plan revision.

7.6 Configuring a Cost Center

Cost centers can be an individual or department within an organization that spreads charges across an enterprise.

The next step to setting up chargeback functionality is to configure a cost center.

Follow the steps below to create a cost center:

1. From the Cost Centers tab, select **Add** as shown in Figure 7–5:

Figure 7–5 Add a Cost Center

ts	
s. Cost centers are typically organized in a hierarc	hy to provide a rollup of charges.
Display Name	Category
Default Cost Center	System
	S. Cost centers are typically organized in a hierarch Display Name

2. In the box that appears, give your cost center a unique identifier and a display name. In the example shown below (Figure 7–6), ACCT was used as the identifier and the name was Accounting Department. For the Level value, select either Top Level (Root) or Member of depending on its position in the hierarchy.

New Cost Center		×
* Cost Center	ACCT	
* Display Name	Accounting Department	
Level	Top Level (Root)	
	Member of	
	0	OK Cancel

Figure 7–6 New Cost Center Name and Display Name

3. Once you have selected the names, click **OK**. You should now see your cost center listed (Figure 7–7).

You will now have successfully created a cost center.

Figure 7–7 Cost Center Confirmation

Confirmation Cost center Accounting Department has been successfully added. Home Charge Plans Cost Centers Entities Reports Use a cost center to aggregate charges across multiple entities. Cost centers are typically organized in a hierarchy to provide a rollup of charges. Date Range May 1, 2015 - May 31, 2015 ‡ Cost Center Cost Center Action + View + Cost Center Display Name Cost Center Manual	Chargeback			
Use a cost center to aggregate charges across multiple entities. Cost centers are typically organized in a hierarchy to provide a rollup of charges. Date Range May 1, 2015 - May 31, 2015 + Image Cost Center Image Cost Center Image Category	-	Department has been su	ccessfully added.	×
Date Range May 1, 2015 - May 31, 2015 + ✓ Cost Center Action - View - + Add & Remove Cost Center Display Name Category	Home Charge Plans Co	st Centers Entities	Reports	
✓ Cost Center Action ▼ View ▼ ♣ Add ※ Remove Cost Center Display Name Category	Use a cost center to aggregate	e charges across multiple	e entities. Cost centers are typically organized in a h	ierarchy to provide a rollup of charges.
Action - View - Add & Remove Cost Center Display Name Category	Date Range May 1, 2015 - M	May 31, 2015 💲		
Cost Center Display Name Category	⊿ Cost Center			
	Action 👻 View 👻 🕂	Add 💥 Remove		
> ACCT Accounting Department Manual	Cost Center		Display Name	Category
	> ACCT		Accounting Department	Manual
Default Cost Center Default Cost Center System	Default Cost Center		Default Cost Center	System

7.7 Configuring an Entity

For each chargeback *entity* (target), the administrator is able to assign a charge plan to a target and a target to a cost center.

The following steps are used to setup your entities:

1. From the Entities tab, select **Add Entities** (Figure 7–8). This will take you to the Add Entities page.

Figure 7–8 Add Entities

Chargeback	Page Refreshed May 26, 2015 11:17:20 PM EDT 💍
Home Charge Plans Cost Centers Entities Reports	
Date Range May 1, 2015 - May 31, 2015 🛊 Search Entity Name 🛊	Advanced
Cost Center and Charge Plan Assignment for Entities	
Action - View - 🗣 Add Entities 💥 Remove Entities 🛛 Assign Plan Assign Cost Center	
Entity Name	Entity Type Charge Plan Cost Center Latest Collection Status Metered
> Databases	
Groups, Systems and Services	
Middleware	
Servers, Storage and Network	
Others	

2. From the Add Entities page, click Add. In the box that appears (Figure 7–9), select **Microsoft SQL Server** for the target type and then select the target you would like to add. You can also search the target's name to find it, if it does not appear in the list.

Microsoft SQL Server	•		
			Search
e	Target Type	On Host	Status
sql	Microsoft SQL Ser	emr4-win8-dev2.b	1
	Microsoft SQL Ser	emr4-win8-dev2.b	
2-win	Microsoft SQL Ser	emr4-win8-dev2.b	
2-win-remote	Microsoft SQL Ser	emr4-win8-dev2.b	1
-win8	Microsoft SQL Ser	emr4-win8-dev2.b	1
-win8-wia	Microsoft SQL Ser	emr4-win8-dev2.b	Û
2-win-remote -win8	Microsoft SQL Ser Microsoft SQL Ser	emr4-win8-dev2.b emr4-win8-dev2.b	9

Figure 7–9 Select an Entity Target

3. Once you have found the target you would like to add, click **Select**. It should now appear in the list of targets located at the center of the page (Figure 7–10). Click **Next**.

Figure 7–10 Added Target

• • • • • • • • • • • • • • • • • • • •						
elect targets and Usage Modes Make Assignment	its Review					
Add Entities: Select targets and Usag						Back Step 1 of 3 Next Submit Cance
Select the targets for chargeback and identify the usa	ge mode if needed.					
View 👻 💠 Add 💥 Remove						Chargeback Entities
Target Name	Target Type	Usage Mode	Charge Entity Type	Members	Valid	
nod-mssql12-win	Microsoft SQL Server	Metered by \$	Microsoft SQL Server	0	1	You must select the targets that will be configured for
						Chargeback. Chargeback is available on the following basic target types:
						•
						Host VM Guest

4. Assign a plan to your entity. Select the target and click **Assign Plan**. In the Assign Plan pop-up (Figure 7–11), choose the charge plan you would like to assign to the entity and select **OK**.

Figure 7–11 Assign a Charge Plan

Assign Plan	×
Charge Plan	Start Date
Example Plan	May 1, 2015
𝗭 Tip Changes apply from the beg	inning of the current reporting cycle (2015-05-01)

5. Assign a cost center to your entity. In the Assign Cost Center pop-up (Figure 7–12), choose the cost center that you would like to assign the entity to. After you have assigned both a charge plan and cost center, click **Next**.



ssign Cost Cent	er								2
View 👻									
Display Name									
> Accounting D	epartmer	nt							
Default Cost	Center								
Columns Hidden	1								
Tip Changes	apply from	n the beginr	ing of the	current re	porting cy	cle (2015	-05-01)		
Tip Initially, to sers can change tecommended to c	ne charge the cost c	back entitie enter to any	s are assig other cha	ned to cos rgeback co	st center a ost center	as defined r as desire	in Target P	roperties.	
							ОК	Cance	el

6. Review your selections. If everything appears correct, click **Submit**. At the top of the Chargeback page you should see confirmation that the entity was added correctly (Figure 7–13):

Figure 7–13 Entity Confirmation

Chargeback							
Confirmation nod-mssql12-win has been added successfully					×		
Home Charge Plans Cost Centers Entities Reports							
Date Range May 1, 2015 - May 31, 2015 + Search Entity Name + Advanced							
Cost Center and Charge Plan Assignment for Entities							
Action - View - 💠 Add Entities 💥 Remove Entities Assign Plan Assign Cost Center							
Entity Name	Entity Type	Charge Plan	Cost Center	Latest Collection Status	Metered		
⊿ Databases							
nod-mssql12-win	Microsoft SQL Server	Example Plan	Accounting Depart	Not Started	 Image: A set of the set of the		
Groups, Systems and Services							
Middleware							
Servers, Storage and Network							
Others							

From the Entities tab, you can change the cost center or charge plan associated with a specific entity by selecting the entity and clicking either **Assign Plan** or **Assign Cost Center**, depending on which one you want to change. To delete the entity, click **Remove Entities**.

7.8 Generating and Distributing Chargeback Reports

Chargeback summary reports are a powerful analytical tool for tracking resource usage and charge distributions. These summary reports show information related to charge or resource utilization broken down by cost center, entity type, and resource. They enable you to quickly assess the entities or cost centers with the greatest charges or resource utilization. Summary reports are primarily useful for drill-down purposes.

Data collection occurs once a day. The daily data collection job for the current cycle is based on charge plan and cost center assignments. The reporting cycle defines the time period for which to calculate charges. The cycle is for the current month starting on the first day of the month.

To generate ad hoc reports:

- 1. From the Enterprise menu, select **Chargeback**.
- 2. Select the **Reports** tab.
- **3.** Design your report from the following options:
 - Use the current report cycle or customize a date range to report on.

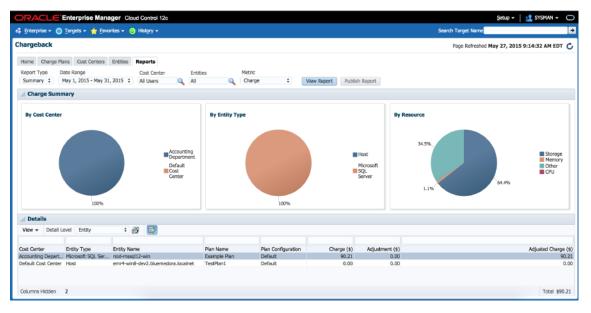
- Choose between summary and trend report types. A *summary* report presents a pie-chart breakdown, while a *trend* report uses a y-axis multiple bar chart to denote usage trends.
- Select specific cost centers or report on all users.
- Select specific entities or entity types or report on all entities within all entity types.
- Choose the metric to report on.

Click View Report to see the results.

The report displays color-coded graphs summarizing charges by cost center, entity type, and resource, with details displayed in the table at the bottom. Click a color box link in the respective graph to recalculate the report contents for the color-coded selection, for example memory in the resource graph.

Figure 7–14 shows and example of a summary report showing charges for the current reporting cycle for all cost centers and entity types, with a breakdown by resource.

Figure 7–14 Chargeback Summary Report



- 4. Filter the details by choosing from the drop-down list; the default is All. Use the query-by-example feature () to search report details. The icon acts as a toggle; clicking it alternately shows or hides text and selection boxes above the table columns. The feature is also available in the **View** menu. Enter search criteria in various combinations by selecting a date and by typing values in the respective columns. Click **Enter** to activate the search.
- **5.** Click the Export icon (¹²⁵) in the details region to export report contents to a file.
- **6.** Click **Publish Report** to make report contents public. This action integrates with BI Publisher, where you can:
 - Save reports in a variety of formats (Excel, PowerPoint, HTML, PDF).
 - Distribute generated reports to e-mail lists (users who do not have access to Enterprise Manager, for example) on a defined schedule.

For information on BI Publisher setup, see the "Configuring BI Publisher on Enterprise Manager" chapter in the *Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*:

http://docs.oracle.com/cd/E24628_01/install.121/e24089/install_em_bip.htm#CEGBEJDJ

7.9 Additional Information

For further information regarding Chargeback, refer to the Chargeback Administration section of the *Oracle Enterprise Manager Cloud Administration Guide*.

http://docs.oracle.com/cd/E24628_01/doc.121/e28814/chargeback_cloud_ admin.htm#EMCL0926

Compliance Management

This chapter provides the instructions for configuring Compliance Management for Microsoft SQL Server.

This chapter contains the following sections:

- About Compliance Management
- Managing Compliance Framework
- Configuring the SQL Server Configuration Compliance Standard
- "Create Like" Compliance Standard
- Editing a Compliance Standard
- Evaluating Compliance
- Using Trend Overview
- Using Compliance Reports
- Managing Compliance Violations
- Additional Information

8.1 About Compliance Management

Compliance management allows the ability to evaluate the compliance of targets and systems. This is accomplished by defining, customizing, and managing compliance frameworks, compliance standards, and compliance standard rules.

A *compliance framework* is a hierarchical structure where any node can be mapped to one or more compliance standards, compliance standard rule folders, and compliance standard rules.

A *compliance standard* is a collection of checks or rules. It is a compliance control that must be tested against come set of IT infrastructure to determine if the control is being followed.

8.2 Managing Compliance Framework

To manage compliance frameworks, follow these steps:

- 1. From the Enterprise menu, select Compliance, and then select Library.
- 2. Click the Compliance Frameworks tab.
- **3.** Highlight the compliance framework you want to manage and choose the action you want to perform.

8.3 Configuring the SQL Server Configuration Compliance Standard

Follow the steps below to configure the Microsoft SQL Server configuration compliance standard:

- 1. From the **Enterprise** menu, select **Compliance**, then select **Library**.
- 2. Click the **Compliance Standards** tab.
- **3.** Refine your search, by using the Search option (Figure 8–1). On the Compliance Standard line, enter **SQL Server Configuration Compliance Standard**, and click **Search**. This action will narrow the list down to the SQL Server Compliance Standard.

Figure 8–1 Refined Compliance Search

Compliance Library					Page Refres	hed May 27, 2015 3:20	:56 PM EDT 🖒
Compliance Frameworks Compliance Stand	ards Compliance Standard Rules Real-time Monitorin	g Facets					
							🐺 Self Update
⊿ Search							
Match OAll Any							
Compliance Standard SQL Server Configurati	on Compliance Standard		Standard Type		\$		
Description			Applicable To			\$	
System-Defined 🗦			Keywords				
						Advanced	Search Reset
To perform an operation on a standard, highligh	t the row and select an operation. To delete multiple stand	ards, select multip	le rows and click Delete.				
Actions - View - Create	Create Like 6d Show Details 🥒 Edit 💥 Delete	/ Associat	e Targets 🧷 Override Target Type	Settings			
Compliance Standard	Description	Compliance Standard State	Applicable To	Keywords	Author	Standard Type	Association (
SQL Server Configuration Compliance Standard	SQL Server Configuration Compliance Standard	Production	Microsoft SQL Server	Configuration	ORACLE	Repository	

4. Highlight the compliance standard and select **Associate Targets**. This will take you to the Compliance Standard Target Association page, as shown in Figure 8–2:

Figure 8–2 Compliance Standard Target Association

Compliance Standard Target Association										
Target Association for Compliance Standard: SQL Server Configuration Compliance Standard This table lists the targets that are associated with the compliance standard selected in the Compliance Standard Library. OK										
View 👻 💠 Add 💥 Remove 🥒 Edit 🕥 Enable 🚫 Disable										
Target Name	Target Type	Evaluation Status	Customized	Transfer Status	Association Time Stamp					
mssql14-c1	Microsoft SQL Server	Enabled		Successfully Done	May 27, 2015 1:32:33 PM					

5. Click **Add**. The Select Targets menu will appear with a list of targets that you can select to associate with the SQL Server Compliance Standard (Figure 8–3). If you do not see the target you would like to select, use the Target Name search bar at the top. Once you have chosen the targets you would like to associate, click **Select**.

Figure 8–3 Select Targets

Search			
Target Name			
			Search
Target Name	Target Type	On Host	Status
mssql12-c1-sql	Microsoft SQL Ser	emr4-win8-dev2.b	1
mssql14-c1	Microsoft SQL Ser	emr4-win8-dev2.b	1
nod-mssql12-win	Microsoft SQL Ser	emr4-win8-dev2.b	^
nod-mssql12-win-rem	ote Microsoft SQL Ser	emr4-win8-dev2.b	Û
nod-mssql5-win8	Microsoft SQL Ser	emr4-win8-dev2.b	Ŷ
nod-mssql5-win8-wia	Microsoft SQL Ser	emr4-win8-dev2.b	

6. The targets that you selected will now appear in the Target Association table (Figure 8–4). Once targets are in the table you can edit the parameters, remove, enable, or disable them.

Figure 8–4 Added Targets

Compliance Standard Target Association										
Target Association for Compliance Standard: SQL Server Configuration Compliance Standard Compliance Standard OK This table lists the targets that are associated with the compliance standard selected in the Compliance Standard Library. OK O										
View - 🗳 Ada 💥 Remove 🥒 Edit 🕢 Enable 🚫 Disable										
Target Name	Target Type	Evaluation Status	Customized	Transfer Status	Association Time Stamp					
nod-mssql5-win8	Microsoft SQL Server	Enabled								
mssql14-c1	Microsoft SQL Server	Enabled		Successfully Done	May 27, 2015 1:32:33 PM					

7. Once you are finished selecting targets, click **OK**. In the box that appears select **Yes** to save your changes. A box will appear advising that the compliance standard was submitted to the target for processing (Figure 8–5). Click **OK**.

Figure 8–5 Compliance Standard Confirmation

i) Information		×
Compliance Standard submitted to target for pro	ocessin	g.
	ОК	

Your target will now be associated with the SQL Server Compliance Standard. It will begin evaluation based on metric collection from that target.

8.4 "Create Like" Compliance Standard

To create a compliance standard like another compliance standard, follow these steps:

- 1. From the Enterprise menu, select Compliance, then select Library.
- 2. Click the Compliance Standards tab.
- 3. Click Create Like (Create Like...).
- 4. Customize the fields as needed.

The name of the compliance standard you are creating *must be different* than an existing compliance standard.

5. Click Save.

8.5 Editing a Compliance Standard

You can customize compliance standards by editing the existing compliance standard rule settings.

Note: You cannot edit an Oracle-provided compliance standard; so, you should create a compliance standard like the compliance standard you wish to edit. See "Create Like" Compliance Standard.

Once you have created the like compliance standard you can make the customized changes.

To edit a compliance standard, follow these steps:

- 1. From the Enterprise menu, select Compliance, then select Library.
- 2. Click the Compliance Standards tab.
- 3. Highlight the standard you want to edit and click Edit (
- **4.** Update the parameters as needed.
- 5. Click Save.

8.6 Evaluating Compliance

Compliance evaluation is the process of testing the compliance standard rules mapped to a compliance standard against a target and recording any violations in the Management Repository.

By evaluating a target against a compliance standard, you are determining whether a target complies with the checks of the standard. To ensure compliance you should regularly perform the following actions:

- Regularly monitor the compliance dashboard to find areas that may indicate your organization has a low compliance score or is at risk.
- Study Oracle-provided reports.
- View the results of an evaluation.
- Study the trend overview as a result of the evaluation.

8.7 Using Trend Overview

Use the graphs in the Trend Overview pages to visually determine whether the targets are adhering to or distancing themselves from the compliance best practices.

To access the Trend Overview pages for compliance standards:

- 1. From the Enterprise menu, select Compliance, and then select Results.
- 2. From the Compliance Standards tab, choose Evaluation Results.
- **3.** On the Evaluation Results page, choose the compliance standard you want to investigate and click **Show Details**.
- 4. On the resulting details page, click the Trend Overview tab (Figure 8–6).

Figure 8–6 Compliance Trend Overview

ORACLE'Enterprise Mana	Iger Cloud Control 12c	Setup 🗸 💶 SYSMAN 🗸 🔘
🤹 Enterprise 🕶 💿 Targets 🕶 🌟 Favo	rites 🕶 🞯 History 🕶	Search Target Name
Compliance Results		Page Refreshed May 28, 2015 11:48:49 AM EDT 💍
Compliance Results > SQL Server Configura SQL Server Configuration Con		
SQL Server Configuration Compilani Maximum Degree of Parallelism Disable xp_cmdshell	SQL Server Configuration Compliance Standard (Compliance Standard) Summary Trend Overview Violations	
 Dosale Ap_omanel Dosale CAR Maximum Worker Threads Turn of Autochrink Auto Growth On Reorganize Index Rebuild Index Rebuild Index Rebuild Index Extra Timastion Log Files Extra Timastion Log Files Set Maximum Hemory Agent Starts Automatically 	Average Compliance Score (%) Time Range: I day 1 week 1 month 100 80 3 ^c 00 01 02 03 05 07 09 11 01 02 </td <td>Imme Range:1 day 1 week 1 month 2.0 1.6 1.6 1.6 0.0 04 PM 00 04 PM 10 04 AM May 27 28</td>	Imme Range:1 day 1 week 1 month 2.0 1.6 1.6 1.6 0.0 04 PM 00 04 PM 10 04 AM May 27 28
	Average Violation Count Per Target Time Range:1 day 1 week 1 month 0.6 0.5 0.4 3 ^c 0.2 0.1 0.5 0.6 0.7 0.8 0.9 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.3 0.4 0.5 0.7 0.8 0.9 1.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.1 0.2 0.5 0.6 0.7 0.8 0.9	Ime Range:1 day 1 week 1 month 2.4 1.6 3 ⁶ 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.8 0.4 0.7 1.1 0.1 AM 0.3 0.4 0.5 2.8

8.8 Using Compliance Reports

Enterprise Manager Cloud Control provides reports specific to compliance. To access these reports:

- 1. From the Enterprise menu, select Reports, and then select BI Publisher Enterprise Reports.
- 2. Scroll to the Compliance Section.

Here you will find a number of reports relating to evaluations against compliance standards and compliance frameworks, as shown in Figure 8–7:

Figure 8–7 Compliance Summary Report

Compliance Summary Report More Catalog Nore Catalog <th co<="" th=""><th>RACLE BI Publisher Enterp</th><th>rise</th><th></th><th></th><th></th><th>Search Al</th><th></th><th>~</th><th>_</th><th>ø</th><th>Administration</th><th>Help~</th><th>Sign Ou</th><th>t (</th></th>	<th>RACLE BI Publisher Enterp</th> <th>rise</th> <th></th> <th></th> <th></th> <th>Search Al</th> <th></th> <th>~</th> <th>_</th> <th>ø</th> <th>Administration</th> <th>Help~</th> <th>Sign Ou</th> <th>t (</th>	RACLE BI Publisher Enterp	rise				Search Al		~	_	ø	Administration	Help~	Sign Ou	t (
Compliance Summary Report. Compliant System Targets for this Framework System Target Compliant Critical Warning Volations Minor Volations Current Volations Statemedora.locainet 0 0 51 Framework Compliant Critical Warning Volations Winter Volations Warning Volations Current Volations sage14-ct 0 0 1 0 0 51 sage14-ct 0 0 1 0 0 51 sage14-ct 0 0 1 0 0 51 sage14-ct 0 0 1 0 0 100 Framework Summary Framework Critical Evaluations Warning Evaluations Violations Violations Warning Violations Score SQL Server Compliance Framework > SQL Server Configuration Compliance Standard 0 0 2 0 1 99	npliance Summary Report							Home	Catalog	9 New ~	📄 Open 🗸	Signed In	As sysm	an	
Top 10 Least Compliant System Targets for this Framework Violations Critical Evaluations Violations Ninor Violations bystem Target Critical Evaluations Warning Evaluations Critical Violations Warning Violations Current Score mrd-win8-dev2.bluemedora.localnet 1 0 5 0 0 51 od=157-rhb.bluemedora.localnet 1 0 0 1 0 51 od=157-rhb.bluemedora.localnet 0 0 1 0 1 99 od=157-rhb.bluemedora.localnet 0 0 1 0 100 100 ramework Summary Evaluations Compliant Evaluations Critical Evaluations Warning Evaluations Minor Violations Current Violations ramework Critical Evaluations Evaluations Compliant Evaluations Critical Violations Warning Violations Current Violations ramework Critical Evaluations Evaluations Critical Evaluations Warning Violations Current Violations ramework Evaluations Compliant Evaluations Critical Violations Warning Violations Score ramework Evaluations 0 0 2 0 1	Compliance Framework SQL Server Complian		Time Range	ast 7 Days	~ Apply	_									
Critical Evaluations Warning Evaluations Warning Violations Minor Violations Current Score mrd-win8-dav/2 bluemedora.localnet 1 0 0 5 0 0 51 dat57-rhfb.bluemedora.localnet 1 0 0 5 0 0 51 dat57-rhfb.bluemedora.localnet 1 0 0 1 0 0 51 dat57-rhfb.bluemedora.localnet 1 0 0 1 0 0 51 dat57-rhfb.bluemedora.localnet 0 0 1 0 0 51 dat57-rhfb.bluemedora.localnet 0 0 1 0 0 51 dat57-rhfb.bluemedora.localnet 0 0 1 0 0 100 dresself-win6 0 0 1 0 0 100 100	ompliance Summary Repo											@ =	o ~ ±		
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8.9 Managing Compliance Violations

You can use the Managing Violations feature to suppress, unsuppress, and clear manual violations:

- **Accessing the Managing Violations feature** (Figure 8–8)
 - 1. From the Enterprise menu, select Compliance, and then select Results.
 - 2. From the Compliance Standards tab, choose Evaluation Results.
 - **3.** On the Evaluation Results page, choose the compliance standard you want to investigate and click **Manage Violations**.

Figure 8–8 Manage Violations

ORACLE	Enterpr	ise Manage	er Cloud	Control 12	c				
Manage Viola	ations								
Compliance Standard: SQL Server Configuration Compliance Standard									
Unsuppressed	Violations	Suppressed V	iolations	Manual Ru	le Violations				
This table lists all	I unsuppresse	d violations. Se	elect rows i	n the table	and click on Supp	ress Violations button in	order to suppress the selected violations.		
View 🔻 60	Suppress Vic	lations							
Rule	Targ	et Name	Applicabl	e To	Keywords	Severity	Recommendation		
Transaction Lo	.ogs mssq	l14-c1	Microsoft	SQL Ser	Configuration	Minor Warning	Backup transaction logs regularly between full database backups.		
L									

Unsuppressed Violations tab

Use this tab to suppress violations:

- 1. Select one or more violations.
- 2. Click Suppress Violations.
- **3.** On the Violation Suppressed Confirmation pop-up, you can suppress the violation indefinitely or provide a date by which the suppression will end. Optionally, you can provide an explanation for the suppression.
- 4. Click OK.

This submits a job to do the suppression asynchronously and returns you to the Result Library page. A suppression adds an annotation to the underlying event stating that the violation is suppressed along with the reason (if a reason was provided).

Note: The job results are not instantaneous. It may take a few minutes for the results to be displayed.

Suppressed Violations tab

Use this tab to unsuppress violations:

- 1. Select one or more violations.
- 2. Click Unsuppress Violations.
- **3.** On the Violation Unsuppressed Confirmation pop-up, you can provide an explanation for the unsuppression.

4. Click OK.

This submits a job to do the unsuppression asynchronously and returns you to the result library. An unsuppression adds an annotation to the underlying event that the violation is unsuppressed along with the reason (if a reason was provided).

Note: The job results are not instantaneous. It may take a few minutes for the results to be displayed.

Manual Rule Violations tab

To clear a manual rule violation:

- **1.** Select one or more manual rule violations.
- 2. Click Clear Violations.
- **3.** On the Clear Violations Confirmation pop-up, you can clear the violation indefinitely or provide a date by which the clear will end. Optionally, you can provide an explanation for the clear.
- 4. Click OK.

This submits a job to do the manual rule violations clearing asynchronously and returns you to the Result Library page. Clearing manual rule violations also clears the underlying violation event.

Note: The job results are not instantaneous. It may take a few minutes for the results to be displayed.

8.10 Additional Information

For further information regarding Compliance Management refer to the "Managing Compliance" section of the *Oracle Enterprise Manager Lifecycle Management Administrator's Guide*.

http://docs.oracle.com/cd/E24628_01/em.121/e27046/compliance_lcm.htm#EMLCM9378

Inventory and Usage Details

This chapter describes the features and how to access the Inventory and Usage Details page (Figure 9–1) for the Microsoft SQL Server.

Figure 9–1 Microsoft SQL Server Inventory and Usage Details Page

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9.1 Inventory and Usage Details Page Feature Summary

With the Inventory and Usage Details page you can:

- View inventory summaries for your Microsoft SQL Server databases.
- View inventory summary information in the context of different dimensions such as version, platform, OS version and vendor, life cycle, department, location, and cost center.
- Drill down multiple levels of inventory details.
- View to a pie chart to break down the inventory data for the roll-up option by color-coded percentages.
- Repeatedly revise selections to refresh chart and details based on new selections.
- Export deployment and details tables as a .csv file.

9.2 Accessing the Inventory and Usage Details Page

To view inventory and usage details:

1. From the Enterprise menu, select Configuration, and then select Inventory and Usage Details.

Alternatively, you can click **Details** in the Inventory and Usage region of the Enterprise Summary page.

- **2.** Select the entity you want to examine and choose a roll-up option. For example, show all deployed hosts rolled up by platform. The page refreshes automatically upon selection.
- **3.** In any given row in the top table, there is a count bar next to the count that represents a percentage of the maximum count. For example, if the maximum number of hosts by platform is four, the bar for hosts represented on two platforms would be half as long. Click the bar to refresh the details table and chart for the row.

9.3 Additional Information

For further information, refer to the "Inventory and Usage" section of the Oracle Enterprise Manager Lifecycle Management Administrator's Guide:

http://docs.oracle.com/cd/E24628_01/em.121/e27046/config_mgmt.htm#EMLCM11629

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