# How to Monitor Oracle VM Manager with Oracle Enterprise Manager 13c

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# 13° ORACLE<sup>®</sup> Enterprise Manager



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#### Introduction

We will discuss the monitoring features of Oracle Enterprise Manager 13c with Oracle VM Manager. Oracle Enterprise Manager has an Oracle VM Infrastructure Cloud Portal as well as the ability to create the logical concept of Systems. Systems within Oracle Enterprise Manager provide a portal and incident management framework where any events are actioned based upon incident rules or corrective actions. Systems are the grouping together of Oracle Enterprise Manager Targets, which relate to each other and form the concept of a system. This is a very flexible framework where users can define their own systems using discovered Oracle Enterprise Manager Targets. This paper will discuss and define an approach to monitoring Oracle VM Server as a System and provide examples of incident rules and corrective actions.

# Configuration of Oracle Enterprise Manager 13c to monitor and manage Oracle VM Manager

There are some configuration steps required to enable the monitoring of Oracle VM Server by Oracle Enterprise Manager. These steps involve configuration on both Oracle Enterprise Manager and the Oracle VM Manager. The high-level steps are as follows:

- Install and configure Oracle Enterprise Manager Agent on the Oracle VM Manager host
- Install the latest Virtualization (VT) and MySQL plug-in on the Oracle Enterprise Manager Server and Oracle Enterprise Manager Agent on the Oracle VM Manager host
- Register the Oracle VM Manager with the Oracle Enterprise Manager Infrastructure Cloud Portal
- Create a monitoring user for the Oracle VM Manager MySQL repository database
- Discover the Oracle VM Manager MySQL repository database as a target within Oracle Enterprise Manager
- Discover the Oracle VM Manager Weblogic Domain and Server
- Create an Oracle VM Manager System within Oracle Enterprise Manager
- Configure the Oracle VM Manager System with custom monitoring charts, monitoring templates, incident rules and corrective actions

#### Install and configure Oracle Enterprise Manager Agent on the Oracle VM Manager host

#### Enable the oracle user account

The oracle user account already exists on Oracle VM Manager Servers. We need to know the oracle user password to enable the Oracle Enterprise Manager Agent installation. Ensure the oracle user on the Oracle VM Manager has a password and you can log in as oracle using the ssh command. Log into the Oracle VM Manager as the root user and run the following command to see if the oracle password is set:

#### [root@mymanager ~]# grep oracle /etc/shadow

#### oracle:!!:17204:0:99999:7:::

If the above command returns a line where the password field contains "!!" or does not begin with a \$, then the password is not set. If a password exists that, we do not know then log into each Oracle VM Manager and run the following series of commands to create and test a password for the oracle user.

```
[root@mymanager ~]# passwd oracle
[root@mymanager ~]# su - oracle
```

```
[oracle@mymanager ~]$ su - oracle
password:
[oracle@mymanager ~]$ exit
[root@mymanager ~]# exit
```

#### Create the Oracle Enterprise Manager Agent directory

We need to create an Oracle Enterprise Manager Agent home directory on the Oracle VM Manager host before attempting to deploy the Oracle Enterprise Manager Agent.

The Oracle Enterprise Manager Agent home directory can reside in any location on the Oracle VM Manager host. Oracle suggests the following location where the Oracle VM Manager application resides; throughout this whitepaper, we reference this as <a href="https://www.agenthomes.com">agent homes.com</a>. Even if you uninstall or reinstall the Oracle VM Manager, this <a href="https://www.agenthomes.com">agent homes.com</a>.

```
[root@mymanager ~] # mkdir -p /u01/app/oracle/product/emagent
```

[root@mymanager ~]# chown oracle:dba /u01/app/oracle/product/emagent

#### Add the oracle user to the Oracle VM Manager host sudoers file

If you are uncomfortable, configuring the oracle user to use sudo to run commands as the root user then you can manually run the privilege commands on the Oracle VM Manager host at the end of the Agent installation. By configuring oracle to run commands as root enables a hands-off installation of the Oracle Enterprise Manager Agent.

Execute the following command as the root user on the Oracle VM Manager host.

#### [root@mymanager ~] # visudo

Add the following entry based upon this example and your agent home location. The following string should be on a single line in the file opened by the visudo command.

```
oracle ALL=(root) /usr/bin/id, <agent home>/*/agentdeployroot.sh, <agent
home>/core/agent_13.2.0.0.0/root.sh, /bin/sh, <agent home>/sbin/nmosudo
```



Oracle recommends that you check the latest documentation for your version of Enterprise Manager to verify this process hasn't changed since this document was published.

For further details on sudo configuration, consult the Enterprise Manager 13.2 basic install guide for <u>Standalone Agent install</u>. Note the section on sudo/pbrun/sesu/su for executing commands as the root user.

#### Add a firewall rule if needed

If a firewall is in place, we need to configure it to allow the Oracle Enterprise Manager Agent to communicate with the Oracle Enterprise Manager Server. The default port for an Oracle Enterprise Manager Agent is 3872; however, it is possible to use any port as long as it is free.

The following example is for the default port of 3872 and using iptables.



#### [root@mymanager ~] # iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 3872 -j ACCEPT

Save and restart iptables as shown below:

#### [root@mymanager ~]# service iptables save

[root@mymanager ~]# service iptables restart

#### Install the required software for the Oracle Enterprise Manager Agent

Ensure the following software packages exist on the Oracle VM Manager host using the following command; install any missing packages using yum.

# [root@mymanager ~]# yum install binutils gcc glibc-common glibc-devel libaio libstdc++ make sysstat

#### Enable the Oracle Enterprise Manager Agent push on the Oracle Enterprise Manager Server

We need to change a configuration file on the Oracle Enterprise Manager Server that allows the Oracle Enterprise Manager Agent deployment to complete even if sudo is disabled. This change will allow the process of deploying an Oracle Enterprise Manager Agent to complete as a single flow without any additional steps or configuration changes on the Oracle VM Manager host. This step does not require the Oracle Enterprise Manager Server to restart.

Perform the following steps on the Oracle Enterprise Manager Server.

### Log into the Oracle Enterprise Manager Server as the oracle user

Edit: \$EMSERVER\_HOME/sysman/prov/agentpush/agentpush.properties

Change: oracle.sysman.prov.agentpush.enablePty=false to oracle.sysman.prov.agentpush.enablePty=true

#### Create the oracle user named credential

Using the Oracle Enterprise Manager UI, add a named credential for the Oracle Enterprise Manager Agent install user, which in our case, is oracle. As the sysman or any other superuser account, navigate to the named credentials page as show in Figure 1 below.



Figure 1: Accessing page for named credentials

Create the named credential for the oracle user as shown in Figure 2 below.

ORACLE' Enterprise Manager Cloud Control 13c	<u>Enterprise</u> ▼	a Enterprise ▼ (③) Jargets ▼ (▲ Eavortes ▼ (④) History ▼ (♣ Setup ▼ (▲ CLOUDADM ▼ ···· a grant is given to you:					
Security					Page	Refreshed Nov 9,	, 2017 5:05:17 AM MST 👈
Named Credentials Following are the list of named credentials you can access. This list include credentials created by you, and credentials for Maximum 2000 credentials will be shown. Click on Query by Example icon to search appropriate credential.	r which explicit grant is given to	о уоц.					
View 🔻 🎽 Create 🖋 Edit 📱 Manage Access 💥 Delete 🥻 Test 👓 View References	Ey	_					
Figure 2: How to create a new named credential			ORA	CL6	°		

Complete the numbered items shown in Figure 3 below.

	erprise Manager Cloud Control 13c		Enterprise ▼	★ Eavorites ▼	tory • Setup •	९ 🌲	CLOUDADM V
curity ned Credentials > Create Credential eate Credential					Page	e Refreshed Nov 9, 20	017 5:28:12 AM MST 🕇
						Test and Save	Save Cancel
▲ General Properties <sup>a</sup> Credential name Credential description <sup>a</sup> Authenticating Target Type <sup>a</sup> Credential type Scope	oracle_ovmm 1 oracle user for Oracle VIM 2 Host Host Credentials (4 Oracle Global	• 3					18
Credential Propertie	es						
* UserName	oracle	6					
* Password		6					
* Confirm Password		0					
Run Privilege	Sudo Run as root	0					
Access Control	8						

Figure 3: Complete the form for named credentials

There is no requirement to complete Access Control (8); only items 1 through 7 in the above screenshot need to be populated. Once completed save the named credential. It is not possible to test this credential on the Oracle VM Manager host, as this requires the Oracle Enterprise Manager Agent to be present. Click on the Save button shown in Figure 4 below.

	×
ou wish to continu	e to save?
Save	Cancel
i	ou wish to continu Save

Figure 4: Save the named credential without testing

The following table provides additional information about numbered items in Figure 3.

#### TABLE 1: EXPLANATION OF NUMBERED ITEMS IN FIGURE 3 ABOVE

Item	Description
1	Provide the name you devised for the named credential, for example oracle_ovmm
2	A short description that will help systems administrators understand the role and purpose of the named credential
3	Always choose "Host" and "Host Credentials"
4	Select "Global"
5	The administrator user account used which in our case is oracle
6	The password for the oracle user
7	If sudo has been configured then select sudo and run as root, otherwise leave to none and be aware the privileged scripts will need to be run as root on the Oracle VM Manager host to complete the Oracle Enterprise Manager Agent install
8	Only required if additional security policies are required

#### Install the Oracle Enterprise Manager Agent

Add the targets manually using Figure 5 below as an example.



Figure 5: Choose to add targets manually

Add a host target as shown in Figure 6 below.



#### Figure 6: Choose to Install Agent on Host

Choose Add as shown in Figure 7 below and then provide the hostname for the Oracle VM Manager host and platform.



CLOUDADM     Add Target     Most and Platform     Installation Details     Review     Add Host Targets: Host and Platform     Back Step 1 of 3     Next   This wizard enables you to install Management Agents on unmanaged hosts, thereby converting them to managed hosts. Enter a session name, and validate (or add) the hosts and their platforms on which you want to install the Management Agent.     * Session Name   ADD_HOST_CLOUDADM_Niov_9_2017_9/33/29_AM_MST   * Agent Software Options			
Add Target			
	· · · · · · · · · · · · · · · · · · ·		
Host and Platform	Installation Details Review		
Add Host Targ	ets: Host and Platform		Back Step 1 of 3 Next Cancel
This wizard enables yo	u to install Management Agents on unmanaged hosts, thereby o	converting them to managed hosts. Enter a session name, and validate (or add) the hosts and the	eir platforms on which you want to install the Management Agent.
* Session Name	ADD_HOST_CLOUDADM_Nov_9_2017_9:33:29_AM_MST		
Agent Software	Options		
+ Add -	Remove Platform Different for Each	Host 🔻	
Host		Platform	
	oracle.com	Linux x86-64	

#### Figure 7: Add the Oracle VM Manager host as a target host

Populate the page as shown in Table 2 below; refer to table 2 below for detailed explanations about each of the required fields indicated by the callouts in the screen shot.

	rprise Manager Cloud Control 13c			CLOUDADM 🔻 号
Add Target				
Host and Platform Ins	tallation Details Review			
Add Host Targets: In	nstallation Details			Back Step 2 of 3 Next Cancel
On this screen, select each row fro	m the following table and provide the installation details in the inst	liation Details section.		
Load Inputs from Previous Se	ssion Select			
Deployment Type: Free	sh Agent Install			
Platform	Agent Software Version Hosts			Mandatory Inputs
Linux x86-64	13.2.0.0.0 oracle.com			B.
Linux x86-64: Agent installation	Detalls			
* installation Base Directory	Au01/app/oracle/product/emagent/	(1)		
* Instance Directory	/u01/app/oracle/product/emagent/lagent inst	Õ		
	Configure Hybrid Cloud Agent	, Ŭ		
Named Credential	ORACLE_OVMM(CLOUDADM)	2		
Root Credential				
Privileged Delegation Setting	Austroln/sudo -u %RUNAS% %COMMAND%	(5)	4	
Port	3872 6			
Optional Details	2			

Figure 8: Complete form to deploy the agent

#### TABLE 2: EXPLANATION OF NUMBERED ITEMS IN FIGURE 8 ABOVE

Item	Description
1	Use the value of <agent home=""> defined earlier when creating the Oracle Enterprise Manager Agent home directory</agent>
2	This value is automatically populated with the correct string based on the installation base directory when this field is selected; the default value should not be modified once it is automatically populated.
3	Choose the oracle user named credentials for the Oracle VM Manager host created earlier
4	Choose the oracle user named credentials for the Oracle VM Manager host created earlier
5	If you created the sudo access for the oracle user then leave the default setting. You can delete this value if you did not create the root access for oracle user. The last step of the agent install will fail and you will need to run a script manually on the Oracle VM Manager host. Follow the instructions given by Oracle Enterprise Manager when the process fails in the last step.
6	This shows the default service port for communication between the Oracle Enterprise Management Server and the agent. Change this if you are using a different service port.
7	There are normally no additional values to provide under operational details.

This step will deploy the Oracle Enterprise Manager agent to the Oracle VM Manager host.

ORACLE Enterprise Manager Cloud Control 130	CLOUDADM V
Add Target	
0 0 •	
Host and Platform Installation Defails Review	
Add Host Targets: Review	Back Step 3 of 3 Next Deploy Agent Cancel
Review the details you have provided for this deployment session and click Deploy Agent.	
Session Name ADD_HOST_CLOUDADM_Nov_9_2017_83329_AM_MST	
Deployment Type Fresh Agent Install	

Figure 9: Choose to deploy the agent

You should watch the progress closely to ensure all steps are completed. If any step fails, you will be given a chance to rectify any problem and then retry again from the point of failure.

	ager Cloud Control 13	3c		Enterprise V	<u> <u> </u> </u>	★ <u>Eavorites</u> ▼	History •	Setup V	9	CLOUDADM -
Add Host								Pag	e Refreshed	Nov 9, 2017 9:45:14 AM MST 👈
				Initialization in Progress			F	lefresh Frequenc	y 30 secon	ds 👻 Refresh Cancel
Agent Deployment Summary:	ADD_HOST_CL	OUDADM_Nov_9	_2017_9:33:29_AM_MST							
Platform H	ost					Initializatio	in Rei	note Prerequisite	Check	Agent Deployment
Linux x86-64	oracle.com	1				X		0		0
Agent Deployment Details: ovml4m1.us.d Initialization Details OMS Log Location Show only w Initialization Phase Name	bracle.com bracle.com:/u01/app/r amings and failures Status	oracle/go_inst1/em/EMG	C_OMS1/sysman/agentpush/2017-11-09_01	9-33-29-AM/applogs	acle.com_deploy.ic	9				
Remote Validations	X									
Transferring Agent Software to Destin Host	ation O									
<ul> <li>Remote Prerequisite Check Details</li> <li>Agent Deployment Details</li> </ul>										

Figure 10: Monitor the progress of the agent installation

Note: If sudo is not configured the agent install will display a warning and state that privilege scripts need to be run manually as the root user.

Root sh	o	The root sh script was not run because the user did not have the privilege to run as root using the Privilege Delegation tool

Figure 11: Example warning if no sudo access configured for the oracle user

For this use case select to "Continue All Hosts" and once the agent install has completed, run the following privileged scripts as the root user on the Oracle VM Manager host. The agent install flow will advise on the exact location of the scripts.

#### <agent home>/agent 13.2.0.0.0/root.sh

/u01/app/oraInventory/orainstRoot.sh

#### Install the latest Virtualization (VT) and MySQL plug-in on the Oracle Enterprise Manager Server and Oracle Enterprise Manager Agent on the Oracle VM Manager host

#### Oracle Enterprise Manager Virtualization (VT) plug-in

The Virtualization plug-in allows you to discover and manage Oracle Private Cloud Application Oracl and storage repositories for all of your Oracle VM environments. Firstly from Setu deployed VT plug-in for both the Management Server and Agents.



<mark>≬ se</mark>rvers, server pools, guests ew the latest and

RACLE Enterpris	e Manager Cloud	Control 13c			Enterprise • Jargets •	avorites •	History •	Setup V	~	-	CLOUDADM V	
I <b>g-ins</b> page lists the plug-ins available, i	ownloaded, and deplo	yed to the Enterprise	Manager system. Us	e this page to deplo	undeploy plug-ins.			Page	Refreshe	d Nov 9, :	2017 10:04:49 AM	M ST 1
tions 🔻 View 👻 🎭 Deple	y On 🔻 🌯 Undeploy	From 👻 🗳 Che	ck Updates 🛛 🖾 D	eployment Activi								
		Version										
Name	Latest Available	Latest Downloaded	On Management Server	Agent with Plug-in	ient yith Description g-in							
🖓 Oracle Virtual Netwo	rkin 12.1.0.2.0	12.1.0.2.0 🎝		0	erprise Manager for Oracle Virtual Networking							
Cracle Virtualization	13.2.3.0.0	13.2.3.0.0	13.2.3.0.0	3	3 Enables management capabilities for Oracle VM in Enterprise Manager.							
Cracle ZFS Storage	App 13.2.4.0.0 🕚	13.2.2.0.0	13.2.2.0.0	1	erprise Manager for Oracle ZFS Storage Appliances							
🚳 Sun Ray Software	12.1.0.1.0 🚯			0	erprise Manager for Sun Ray Software							
Systems Infrastruction	re 13.2.3.0.0 🕦	13.2.2.0.0	13.2.2.0.0	6	erprise Manager Systems Infrastructure plug-in with su	upport for data	center hardwar	e, OS and virtualiz	ation.			
Oracle Audit Vault	12.1.0.4.0	12.1.0.4.0		0	erprise Manager for Oracle Audit Vault provides monitor	oring and manag	gement of Oracl	e Audit Vault Serv	er and its	compon	ents.	

#### Figure 12: VT plug-in view

We can see from this output that the latest available is downloaded and deployed on the management server. We recommend that any existing agent versions are checked by clicking on the Management Agent with Plug-in number. We can see from Figure 13 that all Agents are at the latest and same version.

ORACLE Enterprise Manager Cloud Control 13c	Enterprise V	Targets   Eavorite	s • 🕒 Hist <u>o</u> ry •	Setup -	0		CLOUDADM V
Plug-ins				Page I	Refreshed N	lov 9, 20	17 10:16:46 AM MS
ug-ins > Plug-in Information							
ug-in Information							
me Oracle Virtualization							
Seneral Management Servers Management Agents							
Include Management Agents with discovery contents only							
Search							
Name	Version	Host	Host	os		Plug Man	-in Version on agement Agent
hand							
oracle.com:3873	13.2.0.0.0		cle.com Linux 3	86-64		13.2	3.0.0
oracle.com:3873	13.2.0.0.0 13.2.0.0.0	oracle.com	cle.com Linux 3	:86-64 :86-64		13.2. 13.2.	3.0.0 3.0.0

Figure 13: VT Management Agent plug-in view

As we have newly installed the Agent onto the Oracle VM Manager host, we need to install the VT plugin on this agent. Refer to the <u>documentation</u> for this procedure. If the VT plugin for either the Management Server or Agent(s) are below the latest version we recommend that these be updated referring to the <u>documentation</u>.

#### Oracle Enterprise Manager MySQL plug-in

As with the VT plug-in for the Oracle VM Manager, we require the MySQL plug-in in order to discover and monitor the Oracle VM Manager MySQL repository database.

🚳 MySQL Database	12.1.0.4.0 🕕	12.1.0.3.0	12.1.0.3.0	0 Enterprise Manager for MySQL Database
------------------	--------------	------------	------------	---

Figure 14: MySQL plug-in view

We can see from Figure 14 the blue icon (ringed in red for definition). This indicates that there is a newer version available to download. As per the VT plugin please refer to the <u>documentation</u> to upgrade the plug-in for MySQL on both the Oracle Management Server and Oracle Manager host agent. It is likely that the plug-in upgrade on the Oracle Management Server will require downtime.



#### Register the Oracle VM Manager with the Oracle Enterprise Manager Infrastructure Cloud Portal

This example will cover the registration of an Oracle VM Manager host running Oracle VM Server for x86 version 3.4.X. From this version, Oracle Enterprise Manager 13c uses web services API's to communicate with the Oracle VM Manager host. Earlier versions of Oracle VM Server require different approaches to register. Refer to this <u>documentation</u> with reference to your version of Oracle VM Server.

We need to run the following commands on the Oracle VM Manager host to prepare for the registration of the Oracle VM Manager from Oracle Enterprise Manager.

As the root user, export the Oracle VM Manager certificate to a temporary location.

/u01/app/oracle/ovm-manager-3/ovm\_upgrade/bin/ovmkeytool.sh exportca > /tmp/ovmm.cert

As the agent user (in our case oracle), import the Oracle VM Manager certificate using the password "welcome".

# <agent home>/agent\_13.2.0.0.0/bin/emctl secure add\_trust\_cert\_to\_jks -trust\_certs\_loc /tmp/ovmm.cert -alias ovmm

This should return the following output to confirm:

Message : Certificate was added to keystore

ExitStatus: SUCCESS

From the Oracle Enterprise Manager UI, navigate to the Oracle VM Infrastructure Home Portal to register the Oracle VM Manager.



	Enterprise V 🔘 Targ	iets ▼	★ Eavorites ▼	
ſ	Summary			
	Monitoring		Auto Refresh Off   Page	e Refreshed Nov 9, 2017 10:51:11 AM MST 🕥
	Job			·
or	Reports			
%	Configuration	•		
	Compliance			
	Provisioning and Patching		N/A 12.1.3.0.0	
	Quality Management	->-	N/A 12.1.2.0.0	
	My Oracle Support			E
	Cloud		Cloud Home	
	Chargeback	ſ	Oracle VM Infrastructure Home	
g€	Consolidation		Oracle VM Infrastructure Request Dashboard	
n v	iolations by View Trends		JVM Diagnostics Cloud	
			Testing Home	Average Compliance
		-	Self Service Portal	Score (%)
ple C	nly	-	Dolinias	100
rame	work	_	- Uluda	100

Figure 15: Navigate to the Oracle VM Infrastructure Home Portal

Once at the Portal from the Oracle VM Infrastructure Home menu select to Register OVM Manager.



OR		anager Cloud	Control 13c	
	Infrastructure Cloud	0		
tee	📥 Infrastructure Cloud 👻			
⊿ Ge	Home Open the home page in a new Monitoring Information Publisher Reports Members Register OVM Manager Setup	w window.	Virtual Server Pools Virtual Servers Guest VMs	7 19 120
A R	Target Sitemap Target Information			

Figure 16: Select to Register OVM Manager

Populate the page as shown in Table 3 above; refer to table 3 above for detailed explanations about each of the required fields indicated by the callouts in the screen shot.

**Note**: When you select the Monitoring Agent (Item 2 below), you must have installed the VT plug-in on the agent we installed on the Oracle VM Manager host in the earlier section. If the Oracle VM Manager host does not appear here as a choice then check the agent has the VT plug-in installed.



	terprise Mana	ger Cloud Cont	trol 13c			•	*	<b>•</b>	<b>Φ</b> -	Q 🌢	CLOUDADM 🔻 📴
Infrastructure Clou	id 🕤										
👝 Infrastructure Cloud 👻								Pag	ge Refreshe	d Nov 10, 2017	6:03:50 AM GMT-06:00 👈
											Submit Cancel
Register Oracle VM	I Manager										
Register an existing installatio imported into the Agent Keyst	n of Oracle VM Ma ore:	nager with Enterp	rise Manager.	. Make sure that i	a connection can be es	stablished us	ing the spec	cified URL. I	Ensure that	the Oracle VM	Manager certificate has been
* Name	1	1	)								
* Monitoring Agent	oracle.com	1:3872 Q	2								
Oracle VM Manager											
Connection URLs			~								
* Oracle VM Manager UF	tL tcps://		(3)								
	STIP URL fo used.	or an existing Orac For backward cor	cle VM Manag mpatibility, ent	ger installation. Fo tering tcps:// is si	or example, tcp://localh ifficient".	ost:54321, to	ps:// <serve< td=""><td>r.domain&gt;:5</td><td>64322. For (</td><td>OVMM 3.4 and</td><td>above, tcp/tcps is not</td></serve<>	r.domain>:5	64322. For (	OVMM 3.4 and	above, tcp/tcps is not
* Oracle VM Manage Console UF	er {Lora	icle.com:7002/	(4)								
		or the Oracle VM M	Manager Cons	sole. For example	e, http:// <server.<mark>domain</server.<mark>	>: <port>/, htt</port>	tps:// <serve< td=""><td>r.domain&gt;:&lt;</td><td>port&gt;/</td><td></td><td></td></serve<>	r.domain>:<	port>/		
Monitoring Credentials			Adn	ninistration C	redentials	)					
Specify the credentials to be	used for monitoring	Oracle VM Mana	ger. Spec	ify the credentia	is to be used for admin	istration of C	racle VM M	anager.lf no	ot specified	, it defaults to t	he monitoring credentials.
* Username admin		5	-		se Administration Cred	lentials		-			-
* Password		6	* U:	sername							
			* Pi	assword							

Figure 17: Register OVM Manager

#### TABLE 3: EXPLANATION OF NUMBERED ITEMS IN FIGURE 17 ABOVE

Item	Description
1	Enter the name of the Oracle VM Manager, which will then appear as the target name
2	Use the radio button to select the Oracle Enterprise Manager agent on the Oracle VM Manager host. Note: This agent must have the VT plugin installed
3	As Oracle VM 3.4.X does not require tcps to be configured only "tcps://" is required for this field
4	This is the URL for the Oracle VM Manager including the port of :7002/ for example "https://myovmm.oracle.com:7002/"
5	This section is for the user to monitor the Oracle VM Manager, usually this is the "admin" user
6	This is for the "admin" user password
7	This field is ticked to synchronize by default, which is the recommended setting. If this is unticked then regular manual synchronizations are required
8	This section is if you want a different user to administer the Oracle VM Manager. Usually the user used for monitoring is also used for administration



Click on Submit to run the Registration job.

The job should complete successfully and the Oracle VM Manager should appear in the Infrastructure Cloud Portal.



Figure 18: Oracle VM Managers within the Infrastructure Cloud Portal

#### Create an monitoring user for the Oracle VM Manager MySQL repository database

We need to create a separate user (in our example "oemagent" with password "mychoiceofpassword") within the Oracle VM Manager MySQL repository database. This user is required for monitoring purposes. When running the "mysql" command as the oracle user use the password for the Oracle VM Manager admin user.

The new mysql user must have the following privileges:

- SELECT
- REPLICATION CLIENT
- SHOW DATABASES
- PROCESS



As the oracle user on the Oracle VM Manager host.

```
$ mysql -u root -S /u01/app/oracle/mysql/data/mysqld.sock -p
Enter password:
mysql> CREATE USER 'oemagent'@'localhost' IDENTIFIED BY 'oemagent';
Query OK, 0 rows affected (0.07 sec)
```

mysql> GRANT SELECT, REPLICATION CLIENT, SHOW DATABASES, PROCESS ON \*.\* TO 'oemagent'@'localhost'
IDENTIFIED BY 'mychoiceofpassword';

mysql> exit

#### Bye

Now we need to log in as the MySQL user and check our access.

```
$ mysql -u oemagent -S /u01/app/oracle/mysql/data/mysqld.sock -p
Enter password:
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| appfw |
| mysql |
| ovs |
| performance_schema |
+-----+
5 rows in set (0.03 sec)
mysql> exit
Bye
```



#### Discover the Oracle VM Manager MySQL repository database as a target within Oracle Enterprise Manager

We now need to add the MySQL target to Oracle Enterprise Manager. There are two choices: a manual process or using Oracle Enterprise Manager Auto-discovery. This paper will describe the manual process steps. For Auto-Discovery, follow the steps within the MySQL <u>documentation</u>. One advantage of using Auto-Discovery is there is no need to declare ports as Oracle Enterprise Manager will find these are part of Auto-Discovery.

For a manual discovery, from the Oracle Enterprise Manager UI, navigate to the Add Targets Manually Page (Setup > Add Target > Add Targets Manually).

ORACLE Enterprise Manager Cloud Control 13c	Enterprise ▼	<u> </u>	★ Eavorites ▼	🔅 Setup 🖌 🔍 🌲	CLOUDADM V
Enterprise Summary			Configure Auto Discovery	17 5:57:26 AM MST 4	
Overview View All Targets (387)	▼ Inventory and Usage		Auto Discovery Results	Extensibility	•
Status Targets with Status 310	Show Fusion Middleware Installations	Details	Add Targets Manually Group Dynamic Group Administration Groups Generic System Redundancy System Generic Service	Proxy Settings Security Incidents Notifications Cloud Hybrid Cloud Provisioning and Patching	> > > >
Incidents Updated in the last 24 hours 2	Compliance Summary      Frameworks     Standards     Targets			My Oracle Support Middleware Management	>
Updated in last 7 days 103 Breakdown of incidents updated in the last 7 days	Use  Compliance Score  Violations View Name	Trends		Command Line Interface	e Compliance Score (%)

Then from the overview screen select Add Target Declaratively.



Figure 19: Add Targets Manually

In the Host field and using the radio button search for the Oracle VM Manager, host target. Once selected, in the Target Type field enter MySQL, select the Target Type then click the Add button.

Add Tarç	get Declaratively	×
Host	oracle.com	Q
Target Type	MySQL	
Targ	et Type	
MySC	IL Database	
		Add Cancel

Figure 21: Add Targets Declaratively

Populate the page as shown in Table 4 above; refer to table 4 above for detailed explanations about each of the required fields indicated by the callouts in the screen shot.

	terprise Manager Cloud Control 1	13c		CLOUDADM 🔻 📖
Add: MySQL Data	oase			
Add a target to be monitored	by Enterprise Manager by specifying targe	et monitoring properties		OK Cancel
Target		~		
* Target Name	1-mysql-repo	· )		
Target Type	MySQL Database			
Host	1.us.oracle.com			
Agent	https://	l/main/		
MySQL Database Mo	nitoring Credentials			
Credential type	OracleMySQLCredType	0		
* MySQL User	oemagent			
* MySQL Password	•••••			
* Confirm MySQL Password		$\cup$	N	
Properties				
Host (default - localhost)				
Port (default - 3306)	49500			
Socket				

HOW TO MONITOR ORACLE VM MANAGER WITH ORACLE ENTERPRISE MANAGER 13C

#### Figure 22: Add MySQL Database

#### TABLE 4: EXPLANATION OF NUMBERED ITEMS IN FIGURE 22 ABOVE

Item	Description
1	Enter the name of the Oracle VM Manager MySQL Repository database, which will then appear as the target name
2	This is for the mysql user created in the earlier steps (n our case "oemagent")
3	This is for the "oemagent" mysql password (in our case "mychoiceofpassword"
4	This is the port. To ascertain this port on the Oracle VM Manager host look in the /u01/app/oracle/mysql/data/my.cnf file
	For example: \$ cat /u01/app/oracle/mysql/data/my.cnf grep port
	port=49500

Once the fields are completed click OK. The Target will be added successfully.

B Confirmation	
Add Target - Completed Successfully	
Added MySQL Database	
	Close

Figure 23: MySQL Database target added successfully

To confirm all is OK go to Targets > All Targets

On the left hand side under Databases click on MySQL Database and click on the newly added MySQL target. This will display the Home page for the MySQL Repository.





Figure 24: MySQL Database target home page



#### Discover the Oracle VM Manager Weblogic Domain and Server

We now need to add the WebLogic Domain and Server target to Oracle Enterprise Manager. There are two choices: a manual process or using Oracle Enterprise Manager Auto-discovery. This paper will describe the manual process steps. For Auto-Discovery, follow the steps within the Oracle Enterprise Manager <u>documentation</u>. One advantage of using Auto-Discovery is there is no need to declare ports as Oracle Enterprise Manager will find these are part of Auto-Discovery.

For a manual discovery, from the Oracle Enterprise Manager UI, navigate to the Add Targets Manually Page (Setup > Add Target > Add Targets Manually).

ORACLE Enterprise Manager Cloud Control 13c	Largets ▼	★ Eavorites ▼	🌣 Setup 🗸 🐧	CLOUDADM V
Enterprise Summary		Configure Auto Discovery	Initial Setup Console Add Target	17 5:57:26 AM MST
Overview View All Targets (387) Status Targets with Status 310	Inventory and Usage     Show Fusion Middleware Installations     Details	Auto Discovery Results Add Targets Manually Group Dynamic Group Administration Groups Generic System	Extensibility Proxy Settings Security Incidents Notifications Cloud	> > > > > > > > > > > > > > > > > > >
Down (50)     84% Incidents Updated in the last 24 hours 2	Compliance Summary Frameworks Standards Targets	Redundancy System Generic Service	Hybrid Cloud Provisioning and Patching My Oracle Support Middleware Management	> >
Updated in last 7 days 103 Breakdown of incidents updated in the last 7 days	Use   Compliance Score  Violations  View Trends  Name		Manage Cloud Control Command Line Interface Management Packs	e Compliance Score (%)

Then from the overview screen select Add Non-Host Targets Using Guided Process.



Figure 25: Add Targets Manually

From the Add Using Guided Process box click on Oracle Fusion Middleware / Weblogic Domain and Add.

		>
Guided Discovery	Discovered Target Types	
Oracle BI Suite EE	Oracle BI Analytics Server (10g), Oracle BI Cluster C	
Oracle Cluster and High Availability Service	Cluster, Oracle High Availability Service	
Oracle Coherence	Oracle Coherence Cluster, Oracle Coherence Cache,	
Oracle Compute Site	Oracle Compute Cluster, Oracle Compute Site, Oracle	
Oracle Database, Listener and Automatic Storage Managem	Database Instance, Listener, Pluggable Database, Clu	
Oracle Directory Server Enterprise Edition	Oracle Directory Server Enterprise Edition Server, Dir	
Oracle Exadata Database Machine	Oracle Exadata Database Machine, Oracle Engineere	
Oracle Exalogic	Oracle Exalogic	
Oracle Fusion Middleware/WebLogic Domain	Oracle WebLogic Domain	
Oracle GlassFish Domain	Oracle GlassFish Domain	
Oracle MiniCluster	Systems Infrastructure Diskshelf, MiniCluster, System	
Oracle Public Cloud Machine	Oracle Public Cloud Machine	
Oracle SuperCluster	Oracle Exadata Storage Server, Systems Infrastructu	

Figure 27: Add Targets Using Guided Process

Populate the page as shown in Table 5; refer to table 5 below for detailed explanations about each of the required fields indicated by the callouts in the screen shot.

ORACLE Enterprise Manager Cloud Control 13c	Enterprise V	<u> <u> </u> </u>	★ <u>Favorites</u> ▼	History •	Setup -	۹.	CLOUDADM	•
Middleware					Page R	efreshed Dec 1	9, 2017 2:20:41 AI	
Add Oracle Fusion Middleware/Weblogic Domain: Find Targets						Add Targe	ets Continue	Cancel
To discover a WebLogic Domain, a Management Agent uses JMX protocol to make a t3/t3s connection to the domain's Administration S	Server. If only SSL communication is a	llowed, expand the	Advanced section and	d modify the JMX p	rotocol from the de	efault t3 to t3s.		
To change the Monitoring Agent or name of the Host, and for other advanced settings, click Continue. To discover and save targets w	ith the default values, click Add Targe	ets.						
* Administration Server Host	)							
* Port 7001							R	
*Username weblogic								
*Password ······								
Node Manager Username								
Node Manager Password								
* Unique Domain Identifierwis-domain5								
* Agent oracle.com:3872	()							
Discover Application Versions 🔽								
Advanced								
igure 28: Add Weblogic Domain								

ORACLE

#### TABLE 5: EXPLANATION OF NUMBERED ITEMS IN FIGURE 27 ABOVE

Item	Description
1	Use the radio button and search and select the Oracle VM Manager host
2	Leave this port at 7001 which is the default
3	This is for the WebLogic username which is "weblogic"
4	This is for the "weblogic" user password which is the same as the Oracle VM Manager "admin" user password
5	The Unique Domain Identifier is set by default to Farm01, however you may have many Oracle Weblogic domains, therefore set this to something unique and meaningful
6	The Agent field is automatically populated when you select the Oracle VM Manager host in item 1

Once this is complete click Continue, then Close to assign the targets.

Confirmation	
Finding Targets - Completed Successfully Click Close to assign the agents.	
/ Hide	
Targets found: 13 Click Close to assign the agents.	
	.41
	Close

Figure 29: Assign Weblogic targets



		Control 13c			Enterprise V	) Targets • 🛉 Eavorite	s ▼ () Hist <u>o</u> ry ▼ () <u>S</u> e	tup 🕶 🔍 🌲 🛛 CLOUDADM 👻 🚥
Middle Add Or	ware acle Fusion Middleware/Weblog	ic Domain: Assign Age	ents					Page Refreshed May 17, 2018 9:35:15 AM MDT Add Targets Back Cancel
Targets / You can op left blank.	Targets Found 13 Assigned To Local Agent 13 tionally override any agent assignment using the te ts And Agents Assignments	able below. All the agents used for n	nonitoring the targe	ets must be up. I	or the targets which require local agent, by	defauit, only local agents are a	signed. For such targets, if local a	agent is not found, the "Configured Agent" column is
Viev	Save All Targets To This Agent	Q A:	ssign Agent	Change Host	Name			
Targ	et Name	Target Type	Host		Configured Agent		Status	
	vm_domain	Oracle WebLogic Domain	.us	s.oracle.com	oracle.com:3872	9,	New Target	
	AdminServer	Oracle WebLogic Server	.us	s.oracle.com	oracle.com:3872	٩,	New Target	
	AdminServer	Oracle Coherence Node	.us	s.oracle.com	oracle.com:3872	Q	New Target	
	ovm_console	Application Deployment	.us	s.oracle.com	[Inherited From Parent]		New Target	
	ovm_core	Application Deployment	.us	s.oracle.com	[Inherited From Parent]		New Target	
	ovm_help	Application Deployment	.us	s.oracle.com	[Inherited From Parent]		New Target	
	ovm_console	Domain Application Deployment	.us	s.oracle.com	oracle.com:3872	9	New Target	
	ovm_core	Domain Application Deployment	.us	s.oracle.com	oracle.com:3872	٩	New Target	
	ovm_help	Domain Application Deployment	.us	s.oracle.com	oracle.com:3872	٩,	New Target	
	defaultCoherenceCluster	Oracle Coherence Cluster	us	s.oracle.com	oracle.com:3872	0,	New Target	
	oracle.wls.internal.wsm.cache.local.r	Oracle Coherence Cache	us	s.oracle.com	oracle.com:3872	9	New Target	
	ORA-MDS-local-cache_ADFApplication	Oracle Coherence Cache	.us	s.oracle.com	oracle.com:3872	٩,	New Target	
	ORA-MDS-local-cache_ADFApplication	Oracle Coherence Cache	.us	s.oracle.com	oracle.com:3872	٩	New Target	

#### Figure 30: Assign Targets

Click Add Targets, this adds the discovered targets to Enterprise Manager. Once this has completed click Close. New targets are saved and assigned to the agent to monitor.

Confirmation	
Saving targets To Agent - Completed Successfully 13 targets have been successfully added to Enterprise Manager.	
/ Hide	
Total targets = 13	
13 targets have been successfully added to Enterprise Manager.	
	Close
gure 31: Save Targets	ORAC

When Save targets completes click the OK button on the top right hand corner of the page to finish.

'age Refreshed Dec 19, 2017 2:40:47 AM	MST
arget Management Best Practices	ок

Figure 32: OK to finish

Click on the newly added Weblogic Domain, which takes you to the home page. It may take a few minutes for all the components to start reporting.



Figure 33: Weblogic Domain target home page

#### Create an Oracle VM Manager System within Oracle Enterprise Manager

On the Oracle VM Manager host, we have installed the Oracle Enterprise Manager Agent, registered the Oracle VM Manager, configured the WebLogic Domain/ Server and configured the MySQL repository database. We now need to create an Enterprise Manager System using these components in order to manage and monitor them as a single entity.

From the Oracle Enterprise Manager UI, navigate to Targets > Systems. Click + Add which will expose the drop down menu and click on Generic System. This will start the Add System wizard.



ORACLE' Enterprise Manager Cloud Control 13c Systems A system is a collection of related manageable entities which together provide one or more business functions. I Search 0 Search Generic System -Name Advanced Search Save... View -Add 🔻 / Edit 💓 Remove Database System Name Exalytics System Generic System IsaS Identity and Access System laaS OVM Oracle Exalogic Oracle Public Cloud Machine Redundancy System OVM

Figure 34: Add a Generic System

Give the System a meaningful name and if required input some useful comments. Under the Members panel Click + Add and using the search filters select the following targets:

- Oracle VM Manager Host
- Oracle VM Manager MySQL Database
- Oracle VM Manager
- Oracle VM Manager Oracle WebLogic Domain
- Oracle VM Manager Oracle WebLogic Server

Once all five are selected click Next.



DRACLE Enterprise Manager Cloud Control 13c					CLOUDADM 🔻 🔹
dd Target					
General Define Associations Availability Criteria Charts Revi	ew				
Create Generic System: General					Back Step 1 of 5 Next Cance
General	R				Overview
					A System is a set of infrastructure components that work
* Name 1					together to host one or more services.
Comment Generic System for					Services can be created on top of Systems to expose the
					entry points of business functions provided by the System.
					You can optionally specify additional custom associations
Privilege Propagating System					between the components in the System to logically represent
The time zone you select here is used for scheduling operations such as jobs and blackouts on the system.					the connections or interactions between them. These
* Time-Zone (UTC-07:00) Denver - Mountain Time 💌					associations are displayed in the topology viewer for the
					You can optionally select matrics from member target tunes
System Properties					These metrics will be displayed in Charts view.
					You can define availability of the system based on its key
30.1%.(1)					members.
Members					If you have Privilege Propagation enabled for generic
+ Add X Remove					system, the target privileges granted on the generic system to
Name		Туре	Sta	itus	administrator will be propagated to the member targets.
/ 1-wis-domain_ovm_domain/ovm_domain		Oracle WebLo	Dom N/	A	be members of a generic system enabled with Privilege
/1-wls-domain_ovm_domain/ovm_domain/AdminServer		Oracle WebLo	Server		Propagating Option.
a <b>nna</b> 1		Orade VM Mi	ger 1	h	
Dependent Targets					
Include targets that selected members directly depend on					
Show targets that selected members directly depend on					

#### Figure 35: Add a Generic System General Page

#### On Step 2 of 5 Define Associations, click Next.

CRACLE Enterprise Manager Cloud Control 13c			
Add Target			
General Define Associations Availability Criteria	Charts	Review	
Create Generic System: Define Associations			
Following are the list of associations between members of this system. Admi V Show associations automatically detected by Enterprise Manager	ninistrator can define addi	itional associations between members in addition to the	re associations au
+ Add X Remove			
Target Name	Association	Associated Target	Created By
1-wis-domain_ovm_domain/ovm_domain (Oracle WebLo	Composite Contains	/demain_ovm_domain/ovm_domai	<system></system>
/	Hosted By	1.us.oracle.com (Host)	<system></system>
1-wis-domain_ovm_domain/ovm_domain/AdminServer (	Hosted By	1.us.oracle.com (Host)	<system></system>
1 (Oracle VM Manager)	Hosted By	1.us.oracle.com (Host)	<system></system>
1-mysql-repo (MySQL Database)	Hosted By	1.us.oracle.com (Host)	<system></system>

Figure 36: Add a Generic System Define Associations Page

The Availability Criteria page allows the user to define how the System is classed as up. The Availability Criteria can be set to any of the Key Members being up or all of them. With the Oracle VM Manager included in this System there may be Virtual Machines that are down for some reason. If the All of the Key Members is chosen, any down Virtual Machines will cause the System to appear down which may not be useful.

Select which Members are required for the up calculation and click Next.



ORACLE	Enterprise Manager Cloud Control 13c					CLOUDADM V
Add Target						
General	O O Define Associations Availability Criteria	Charts Review				
Create Generi	ic System: Availability Criteria					Back Step 3 of 5 Next Cancel
Availability Criteria	Specify the larges that need to be up in order fi Any Of The Key Members All Of The Key Members Members	or the system to be considered up. All configured me Key Members Administrare (Cloads WebLogic Sarver) 1 (Cloads VM Masquer) 1 (Langer) 1 (Langer	anbers with availability are candidates for key Me	ambers.	R	

Figure 37: Add a Generic System Availability Criteria Page

The Charts section is ticked by default to include Oracle suggested charts. Charts are very useful and can be added per target type (for example MySQL Instance Activity Uptime). Add any required chart types and click Next to review or Finish.

ORACLE Enterprise Manager C	loud Control 13c			CLOUDADM 🔻 🔹
Add Target				
O O General Define Associations A	Availability Criteria Charts	Review		
Create Generic System: Charts				Back Step 4 of 5 Next Finish Cance
Specify the charts that will be shown in the Syste	m Charts page.			
Include Oracle suggested charts.				
🕂 Add 🥒 Edit 💢 Remove				
Metric Name	Chart Description			
Host: Run Queue Length (5 minute average,	per 5 Peak Targets	A		
Host: Free Logical Memory (%)	5 Peak Targets	E		
Host: Total Disk Space Utilized (across all loc	cal fil 5 Peak Targets			
Host: Total Processes	5 Peak Targets			
Application Deployment: Request Processing	g Ti 6 Peak Targets	-		
Columns				
These columns and abbreviations will be seen in	the Members and Dashboard pages.			
🖋 Edit				
Name	Abbreviation			
Name	Name			
Туре	Туре			
Status	Status		R	
Incidents	Incidents			

Figure 38: Add a Generic System Charts Page

Once the System is created, we are shown a list of the Systems. To access the newly created System simply click on it.



Concretion System     COUDADIM     Concretion System     COUDADIM     CONCRETION     COUDADIM     COUNT     COUDADIM     COUNT     COUDADIM     COUNT     COUDADIM     COUNT	
Concert System       Conce	
Image: Cloud ADM         Status           Owner CLOUDADM         Availability of the solution of the soluti	shed Nov 13, 2017 6:01:03 AM MST 📢
Owner CLODONADM         Privilege Propagation Enables'         Availability of 1000 TUB Hovember 13, 2017 8.54.10 AM MST         d Overview of Incidents and Problems         Incidents         Updated in las 7 days 1         Searchow of Incidents widded in the last 7 days 1         Availability of 1         Dension         Availability of 1         A	\$
Processed         RECENT Any Of The Key Members         Recent Any Of The Key	
Availability Criteria: Any Of The Key Members       Image: Company of the Key Members	
Idea         Yare         Yare <th< td=""><td></td></th<>	
Incidents         Updated in tast 7 days         Image: Company of the stat 7 days         Image: Company of	
Incidents         Update in last 7 days         Image: Company         Image	
Updated in sat 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents updated in the last 7 days 1         Image: Category of incidents upd	
Breakder on finistens updated in the tast 7 days         Category       Image: Category       Image	
Category       V       V       V         Availability       1       -       -         Patomanoe       -       -       -         Security       -       -       -         Othes       -       -       -         Problems       -       -       -	
Availability         1         - <t< td=""><td></td></t<>	
Padramanas	
Security Cohenes Constrained of the Constrained of	
Colleas General Members Problems Tetri Area O	¢
Problems Text form 0 View Tends	
	Average Compliance
A lohs Activity	Score (%)
Summary of Jobs whose start date is within the last 7 days. Configuration Monitoring for Core Linux Packages	100 🔺
Configuration Monitoring for User Access Linux Packages	100 E
Siliuw Latest Kun V Swarth Job Name O Cracle VM Manager supported configuration compliance	100
O Show Jobs     Configuration Monitoring for Networking Linux Packages	100
Configuration Menitoring for Security Linux Packages	100 👻
A Blackouts	
✓ Dependent Targets	Ø
Create - Name Type Status Association	
Submitted to No dependent targets.	
Status Generic System Any Member	
Scheduled 0 0	
Active 0	
🖌 Configuration Changes 🔅	
Configuration Changes 751	
HC HC	

Figure 39: Oracle VM Manager Generic System Home Page

If you click the Dashboard icon at the top (red oblong), we can see the System components and see if any are down. Notice the Oracle VM Manager has some classed as down which would be the Virtual machines as discussed earlier.

ORACLE Enterprise Manager Cloud Control 13c		Enter	prise • () <u>T</u> argets •	★ Eavorites ▼  History ▼	Setup V	Ŷ.	CLO	JDADM	•				
î <b>1</b> 0													
🕂 Generic System 🔻 🥕 Operations 📲 Dashboard 🖧 Topology													
Seneric System: 11							9	ige Retreaties November 13, 2017 6	02 49 AM M ST C Sto	p Auto I	Refrest	Cu	stomiz
▲ Member Targets (5)													
Name								Tree	Statur A 🔻	Incidents			
								.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Julius	•	8	<b>A</b>	•
								Oracle VM Manager	1 🕹 34 👚 10 N/A	1	11	4	2
/Farm01_ovm_domain/ovm_domain								Oracle WebLogic Domain	1 💺 8 👚 4N/A	1	1	-	
ovmL2m1:49500								MySQL Database	11	(*)	1	8	
ovmL2m1.us.orable.com								Host	11		1		
⊿ Incidents and Problems Actions + View + Calegory Capacity ★ Acknowledge ∠ Clear - ●0 ⊗0 ▲3	<b>▶</b> 0												
Summary	Severity	Status	Escalation Level	Туре	Time A V Since Last Update	Target Name	Last Comment						
Oriside VM Server's used space for IOVS/Reportine@004/b00000300005d1481561253026 is New No Incident 25 days 3 hours 4							(Incident created by rule (Name = PCA_Radk_Warnings, PCA Warning; Owner = CLOUDADM).) on Oct 19, 2017 3:20:30 AM MDT						
Oracle VM Server's used space for /OVS/Repositories/0004/b00000300005d01481561253026 is 72.43198169174532%, crossed warning (70) or critical (80) threshold.	<b>A</b>	New	No	Incident	25 days 3 hours	5	(Incident created by rule 3:20:30 AM MDT	(Name = PCA_Rack_Warnings, PCA	Warning: Owner = CLOUD	ADM).) o	on Oct 1	9, 2017	ŝ.
Oracle VM Server's used space for /OVS/Repositories/0004fb00000300005661481561253026 is 72.43198169174532%, crossed warning (70) or critical (80) threshold.	<b>A</b>	New	No	Incident	25 days 3 hours	21	(Incident created by rule 3:20:30 AM MDT	(Name = PCA_Radk_Warnings, PCA	Warning; Owner = CLOUD	ADM).) o	on Oct 1	9, 2017	6





Configure the Oracle VM Manager System with custom monitoring charts, monitoring templates, incident rules and corrective actions

#### **Custom monitoring charts**

If we from the Generic System drop down menu select Monitoring > Charts we can see the Oracle recommended charts for our system. As discussed these can be edited, removed and new ones pertinent to the target type added.

ORACLE' Enterprise Manager Cloud Control 13c		Interprise ▼ (◎) Interprise ▼ (●) History ▼ (♀ Setup ▼ ) ▲ CLOUDADM ▼				
🕈 ovmL2m1 🔀						
🗎 Generic System 🔻 🥜 Operations 📲 Dashboard 🔥 Topology		Page Refreshed Nov 13, 2017 6:08:1	15 AM MST 🕥			
Charts		View Data La	st 24 hours			
mysql_server_has_been_restarted mysql_server_has_been_restarted MySQL Database. Highest Average	CPU Usage (%) CPU Usage (%): Orade WebLogic Server: Highest Average 3.9 MMU/WM/~~M/M/M/M/M/M/	Run Queue Length (5 minute average.per cpu) Run Queue Length (5 minute average.per cpu). Host: Pest Targets 0.97	it 7 days it 31 days			
бо им 12 17 00 рм. 07 11 12 00 АМ. Nov. 12 17 00 рм. 145500 Таble Vise	<sup>00</sup> 67 AM 11 03 PM 67 11 13 03 AM Nov 2 17 ■ Ferm01_com_donain/com_donain/Server Table View	0.00 The state and the state a				
Request Processing Time (ms) Recuest Processing Time (ms) Application Deployment: Peak Targets 33 44 45 46 47 47 47 47 47 47 47 47 47 47	Request Processing Time (ms)         Request Processing Time (ms)         S3         Month Street         Bog AM         Nov ± ±3         OS PM         Brandl_som_domain/som_domain/domain/some         Table View	Free Logical Memory (%) Host: Peak Targets				
Rean Accesses (ner minute)	Rean Accesses (per minute)	Total Disk Snare Utilized (across all local filesystems in MB)				

Figure 41: Oracle VM Manager Generic System Charts

Notice in the red oblong the View Data pull down menu. This can be used to increase the chart views from 24hours to 7 and 31 days.

To add, remove or edit the charts from the Generic System main menu > Target Setup > Edit System. This runs the Setup wizard again with an opportunity to manipulate the charts on Step 4 of 5. Here you can choose to exclude the Oracle suggested charts by unticking the box.

If you click + Add you are presented with a drop down menu of the Target Types within the System. Select the target Type (in our example MySQL).



dd/Edit Chart		
elect the type of targe	t and metric you would like to use. Then sele	ect the chart type that you would monito
* Type	MySQL Datębase	
* Metric	Host	
* Chart Type	MySQL Database Oracle VM Manager Oracle WebLogic Domain	
Chart Type	Oracle WebLogic Server	

Figure 42: Add / Edit Chart (Select Type)

Then Select the Metric Type.

Add/Edit Chart		×
Select the type of targe	t and metric you would like to use. Then select the chart type that you	would monitor.
* Type	MySQL Database	
* Metric		-
* Chart Type	InnoDB Activity : Buffer Pool Read Requests (Delta)	
Chart Type	InnoDB Activity : Buffer Pool Reads (Delta) InnoDB Activity : Buffer Pool Wait Free (Delta) InnoDB Activity : Buffer Pool Write Requests (Delta)	
	InnoDB Activity : Data Fsyncs (Delta) InnoDB Activity : Data Pending Fsyncs	
	InnoDB Activity : Data Pending Reads InnoDB Activity : Data Pending Writes	13
	InnoDB Activity : Data Read (Delta) InnoDB Activity : Data Reads (Delta)	
	InnoDB Activity : Data Writes (Delta) InnoDB Activity : Data Written (Delta)	
	InnoDB Activity : Dblwr Pages Written (Delta) InnoDB Activity : Dblwr Writes (Delta)	
	InnoDB Activity : InnoDB Buffer Cache Sub-Optimal Hit (Rate) InnoDB Activity : InnoDB Buffer Pool Writes Bottleneck (Rate)	1
	InnoDB Activity : InnoDB Log Waits Bottleneck (Rate) InnoDB Activity : Log Waits (Delta)	
	InnoDB Activity : Log Write Requests (Delta) InnoDB Activity : Log Writes (Delta)	+

Figure 43: Add / Edit Chart (Select Metric)





Add/Edit Chart		>
Select the type of targe	and metric you would like to use. Then select the cha	art type that you would monitor
* Type	MySQL Database	
* Metric	Instance Activity : Open Files	•
* Chart Type	Targets with highest average	
Chart Type Targets with highest a Display top targets w	Targets with highest average Targets with lowest average System Statistics Peak targets Selected Targets ric.	
		OK Cance

Figure 44: Add / Edit Chart (Select Metric)

If you choose Targets with highest or lowest average then you are able to select the number from 1 - 5. Select OK to finish and then Finish to exist the wizard. To check the new chart from the Generic System main menu > Monitoring > Charts.

#### **Monitoring templates**

Within Oracle Enterprise Manager, you can create a monitoring template. This is very useful if you have custom requirements within your data centre monitoring where you are monitoring to certain thresholds. Some metrics within Oracle Enterprise Manager have thresholds already set which are based upon best practice. The templates are useful as this saves time as you can apply these to individual targets, groups, systems or an Infrastructure Cloud. This means any new additions to for example a System or Infrastructure Cloud will inherit this required threshold settings.

For example, it is useful to know when your Oracle VM Server Repository file systems are filling up. There is a metric within the Oracle VM Server Pool target: Oracle VM Server File system % Used. This example Monitoring Template generates a warning at 70% full and critical at 80%. Monitoring templates are available via Enterprise > Monitoring > Monitoring Templates.

ORACLE' Enterprise Man	ager Cloud Control 13c				🛃 Enterprise 🔻 🔘 Iergels 🔻 🌟 Eavoriles 🔻 🕐 History 🔻 🧔 Setup 🔻 🔍 🌲 CLOUDADM 🗙 🚥	
Monitoring Templates Monitoring Templates can be used to appl	y a subset of monitoring and co	llection setting	s to multip	le targets.	This allo	Page Refreshes Nov 11, 2017 5:02:28 AM MST 🕑
✓ Search Name Tar	get Type All		• ٩			✓ Apply Status Passed ♥ 7 Pending ∑ 0 Failed ♦ 1
Actions  View  Create	Edit 💥 Delete Apply.	Compan	e Settings	Vi	ew Past A	pply Operations
Name	Target Type	Owner	Passed	Status Pending	Failed	Description
Basic MS SQL Monitoring Template	Microsoft SQL Server	SYSMAN	0	0	0	Recommended basic template for monitoring SQL Server.
Cloudadm_VM_Server_Pool	Oracle VM Server Pool	CLOUDADN	7.	0	0	test Monitoring Template with OVM Server Filesystem set to 70 for Warning and 80 for Critical.
Cluster Template	Microsoft SQL Server	SYSMAN	0	0	0	Recommended template for monitoring errors in a dustered SQL Server environment.
High Availability Disaster Recovery Ter	mpla Microsoft SQL Server	SYSMAN	0	0	0	Recommended template for monitoring errors (n a HADR (Always On) SQL Server environment.

Figure 45: Monitoring templates



The template shown in Figure 45 ringed with the red oblong is one I created to satisfy the use case described earlier. Any user can create templates as long as they have the correct privileges for the managed targets. If we highlight my template and then click on Edit this enables us to edit this template.

	anager Cloud Control 13c
Monitoring Templates Monitoring Templates > Edit Monitoring Te Edit Monitoring Template: Cloudar	emplate: Cloudadm_VM_Server_Pool dm_VM_Server_Pool
General Metric Thresholds Other Col	Cloudadm VM Server Pool
Target Type Owner	Oracle VM Server Pool CLOUDADM
Description	test Monitoring Template with OVM Server Filesystem set to 70 for Warning and 80 for Critical.
Default Template	Make this the default template for this target type
	IIP If checked, this template will be applied automatically to newly discovered Oracle VM Server Pool targets, completely replacing Oracle provided out-of-box settings.

Figure 46: Edit a Monitoring template

If we then click on Metric Thresholds we can see and edit any thresholds within the target.

OR/	CLE Enterprise Manager Cloud Control 13c		Enterprise ▼	<u>Targets</u> ▼	★ Eavorites ▼	⊕ History ▼	Setup -	<, ♦	CLOUDADM V
Monito	oring Templates								
						Triggered Collect	tion		
	Free Space (MB)	>		None					Ø
	Used Space (%)	>		None					Ø
	♡ OVM Guest Load					Every 5 Minutes			
	Relative CPU Utilization (%)	>		None					٢
	Up Since								
	☑ OVM Guest Network Activity					Triggered Collect	tion		
	Read Throughput (KB/S)	>		None					Ø
	Total Throughput (KB/S)	>		None					Ø
	Write Throughput (KB/S)	>		None					٢
	☑ OVM Server Disk Activity					Triggered Collect	tion		
	Read Throughput (ldb/s)	>		None					Ø
	Total Throughput (kb/s)	>		None					1
	Write Throughput (kb/s)	>		None					٢
	♥ OVM Server Filesystems					Triggered Collect	tion		
	Free Space (MB)	>		None					٢
	Total Space (MB)								
	Used Space (%)	>	70 80	None					٢
	UUID				1.0				

Figure 47: Edit a Monitoring template metric

We can see the Used Space (%) metric with an operand of Greater than (>), 70 for Warning and 80% for Critical. If we return to the main Monitoring template page, we can highlight this template and apply it to our Oracle VM Manager System. There are options with respect to applying the metrics to the target. The default is only override metrics that are common to both the target and template. For more options on the options, refer to the <u>documentation</u>.



	LE Enterprise	Manage	r Cloud Control 13c					🛃 Enterprise 🔻 🎯 Targets 🔻 🌟 Eavorites 🔻 🕒 History 🔻 🏟 Setup 🔻 🔍 🌲 CLOUDADM 🕶
Monitoring Monitoring Temp unaffected on the	<b>g Templates</b> plates can be used to app e target.	oly a subse	et of monitoring and colled	tion settings to m	ultiple targ	ets. This all	ows you to	Page Refreshed Nov 13, 2017 8:56:35 AM MST 🌓
A Search								🛋 Apply Status
Name	Targ	get Type	All	- (	0			↑ Passed 🖌7 Pending 🔀 0 Failed 😢 0
🔲 Display C	Pracle Certified Templates	s						
Actions - Vi	ew 👻 🎽 Create	N Edit	X Delete Apply	Compare Se	ettings	View Pa	st Apply O	erations
				3		Status		Design of the second
Name			larget lype	Owner	Passed	Pending	Failed	Description
Basic MS S	QL Monitoring Template		Microsoft SQL Server	SYSMAN	0	0	0	Recommended basic template for monitoring SQL Server.
Cloudadm_	VM_Server_Pool		Oracle VM Server Pool	CLOUDADM	7	0	0	test Monitoring Template with OVM Server Filesystem set to 70 for Warning and 80 for Critical.
Cluster Tem	plate		Microsoft SQL Server	SYSMAN	0	0	0	Recommended template for monitoring errors in a clustered SQL Server environment.
		amplate	Himmed COL Comme	OVOMAN	o.	0	0	Recommended template for monitoring errors in a HADR (Always On) SOL Server environment

#### Figure 48: Apply a Monitoring template

We click the Add button, which brings up a selection panel where we can choose the target type of System.

Select Targets							×
Only targets on	which you have M	anage Targe	et Metrics privileges and	are not associated with	a Monitoring Template through a	Template C	ollection are displ
Target Type	Generic System	•					
Target Name							
On Host							
Configuration Search	<no configuration="" sear<="" td=""><td>ch selected&gt;Q</td><td>1</td><td></td><td></td><td></td><td></td></no>	ch selected>Q	1				
							Search
Target Name					Target Type	On Host	Status
1					Generic System	N/A	1
1					Generic System	N/A	1
<b></b> 1					Generic System	N/A	+
MVO_					Generic System	N/A	1
Rows Selected 1							Mode Multi-Select
							Salact Cancel
							Secon Cancer

Figure 49: Apply a Monitoring template to a Generic System target

Click Finish to complete the application and after a few moments, the number in the Passed field will increase by the new number of targets that have the monitoring template applied.

Name.	T	0	Status			Developing			
Name	larget lype	Owner	Passed	Pending	Failed	Description			
Basic MS SQL Monitoring Template	Microsoft SQL Server	SYSMAN	0	0	0	Recommended basic template for monitoring SQL Server.			
Cloudadm_VM_Server_Pool	Oracle VM Server Pool	CLOUDADM	9	0	0	test Monitoring Template with OVM Server Filesystem set to 70 for Warning and 80 for Critical.			
Cluster Template	Microsoft SQL Server	SYSMAN	0	0	0	Recommended template for monitoring errors in a clustered SQL Server environment.			
High Availability Disaster Recovery Template	Microsoft SQL Server	SYSMAN	0	0	0	Recommended template for monitoring errors in a HADR (Always On) SQL Server environment.			

Figure 50: Apply a Monitoring template Passed number



If we click on this number (in our example 9) this takes us to a list of applications of the monitoring template by date and number of targets the template was applied to. If we click on these new targets, we are shown the new apply operations by target.

Passed Apply Operation for C	loudadm_viM_server_Pool	Oracle VIVI Server Poo	1)			×				
View 🗸 🔀 Delete 🗙 Delet	ete All Stop Stop All									
Target Name	Agent	Metrics With Key Value Settings	Replace Metrics	Applied On	Applied By	Message				
A	https://	Retain extra keys in target	No	Nov 13, 2017 9:01:06 A	CLOUDADM					
12	https://com	Retain extra keys in target	No	Nov 13, 2017 9:01:06 A	CLOUDADM					

### Passed Apply Operation for Cloudadm\_VM\_Server\_Pool(Oracle VM Server Pool)

Figure 51: Apply a Monitoring template apply operations

#### **Incident rules**

For full information on the Oracle Enterprise Manager Incident management framework, review this <u>document</u>. You can take action on events or incidents. An example of an event could be a metric within a target exceeding a set threshold. An incident is useful as it can address complex situations where multiple events are related and may indicate higher-level issues.

To access the Incident Rules framework from the Oracle Enterprise Manager UI, navigate to Setup > Incidents > Incident Rules. There are some system-defined rules, which have a padlock beside them indicating they cannot be changed.

DRACLE' Enterprise Manager Clou	d Control 13c	Enterprise 🔻		ets • 🔺	avorites 🔻 (	B History •		up • 🔍 🌲 👘	CLOUDADM 👻 🔹
rule set is a collection of rules that applies to a common anding e-mails, creating incidents, updating incidents, and	set of objects, for example, targets, jobs, and templates. A rule contains a set of automated actions to be ta creating tickets. Rule sets and rules are evaluated and applied in the order specified. You can change the	en on specific events, incidents or problems. For ex rder using the Reorder Rule Sets action.	cample, indiv	idual rules can re	spond to incomi	ng or updated	events, inci	Page Refreshed Nov 15, 2017 dents, or problems, and then	9:03:46 AM MST 🐧
Actions 🔻 View 👻 🎽 Create Rule Set 🜼	View 🖌 Edit 🗙 Delete E-mail 👻 🛃 Import 🖄 Export 🕍 Simula	e Rules 👆 Reorder Rule Sets Search			9				
Name	Description		Order	Enterprise Rule Set	Owner	Enabl	er Email Me	Last Updated On	Last Updated By
Incident management rule set for all targets	Rule set to create and manage incidents for all targets		1	~	System Gene	rat Yes	No	Oct 10, 2016 4:35:21 AM	
Event Management Rule set for Self Update	Rule set to manage Self Update events.		2	~	System Gene	rat Yes	No	Oct 10, 2016 4:35:22 AM	
OVM_Servpool_Repo_file_system			3	~	OVMPM	Yes	No	Nov 14, 2017 1:51:26 AM.	. CLOUDADM
Agent			4	~	CLOUDADM	Yes	No	Oct 19, 2017 3:50:35 AM	CLOUDADM
Rack_Warnings			5	~	CLOUDADM	Yes	No	Nov 14, 2017 1:54:30 AM.	. CLOUDADM
Compute_Node_Down			6	~	CLOUDADM	Yes	At lea	Oct 12, 2017 12:07:41 P	CLOUDADM
▶ _OVMM_MySQL			7	~	CLOUDADM	Yes	At lea	Nov 7, 2017 10:12:33 AM.	CLOUDADM
▶ _ovmm_wls			8	~	CLOUDADM	Yes	At lea	Nov 7, 2017 10:13:02 AM.	CLOUDADM

Figure 52: Incident Rules

The following actions are available from an Incident Rule:

- Send an email (the email server must be enabled within Oracle Enterprise Manager and email addressed defined for Administrators)
- Page someone
- Send an SNMP V1 or V3 trap (these SNMP targets need to be configured within Oracle Enterprise Manager)
- Run an OS command
- Run a PL/SQL procedure
- Create an incident
- Send the information to an external connector (these connectors must be available and configured within Oracle Enterprise Manager)



The following example Incident Rule is to capture when an Oracle Enterprise Manager Agent is down. The rule sends the Cloud Administrator an email when the Agent goes down and when it comes back up.

The rule is based upon a single Agent; however, it could be based upon a group of Agents.

	Cloud Control 13c		CLOUDADM 🔻 🔹
Incident Rules - All Enterprise Rul	es		
Edit Rule Set			Save Cancel
A rule set is a collection of rules that applies to a com as sending e-mails, creating incidents, updating incide	mon set of objects, for example, targets, jobs, and templates. A rule infs, and creating tickets.	contains a set of automated actions to be taken on specific even	s, incidents or problems. For example, individual rules can respond to incoming or updated events, incidents, or problems, and then take actions such
* Name Agent		Enabled 🗹	✓ Steps to define a Rule set
Description		Owner CLOUDADM How is this used?	Provide Name, Description and Type Enterprise rule sets represent business processes to manage events, incidents and problems, it allows all actions including create and update of incidents, Personal notification rule set is for rules to send e-mails to current user only.
		ijio smojnav	Choose source - e.g., Targets, Jobs Choose set of targets for the events, incidents or problems which would match the rules in the rule set. You can choose sources other than targets as well - e.g., lobs.
Applies To Targets			Add Rules Add rules to define specific conditions to match events, incidents or problems. Rules also identify the actions to be taken when the conditions match - e.g., e-mail, create incident.
✓ Targets Select targets to which this rule set applies. You ca	n exclude specific targets from the scope - for example, all databas	e targets except 'MyDevDB'.	
All targets of types	Ŧ		
Specific targets			
Add Groups V + Add X Rema	ove		
Name	Type		
Excluded targets	Agent		
+ Add 🗙 Remove			
Name	Туре		
No target selected			

#### Figure 53: Edit an Incident Rule

Figure 53 shows the events I am interested in. These could be set to all events; however, I have set to up, down, unreachable and unreachable end. I can also set corrective actions here as part of the rule.

	rise Manager Cloud Control 13c	CLOUDADM 🔻 🚥
Edit Rule Set - PCA Ag	gent	
•		
Select Events Ad	d Actions Specify Name and Review Description	
Edit Rule - rule 212: S	Select Events	Back Step1 of 4 Next Cance
Type Target Availability	0	
O All events of type 1	Target Availability	
Specific events of	type Target Availability	
Selected events of type Tai	rgot Availability Remove	
Target Two	Availahilih	For Target down availability
rarger type	Availability	Corrective action status
Agent	Agent unreachable end,Agent unreachable,Up,Down	

#### Figure 54: Select Events

In the Add Conditional Actions page, we can select the ideal conditions. We can also have many options such as Create an Incident, Send SNMP, Submit a corrective action or forward to an event connector.

ORACLE Enterprise Manager Cloud Control 13c	CLOUDADM 🔻 🚥
Add Actions	
Add Conditional Actions	Continue Cancel ^
Define actions to be taken when an event matches this rule.	
▲ Conditions for actions You can define the actions to apply whenever the rule matches or apply them conditionally.	
Always execute the actions	
O Only execute the actions if specified conditions match	
Create Incident or Update Incident If there is no incident associated with the event, you could create one and optionally, set the incident owner and priority. If an incident exists, you could update the incident.	
Create incident (If not associated with one)	

#### Figure 55: Add Conditional Actions - Top

Basic Notific	cations			
E-mail To	SIMONH	9		
E-mail Cc		Q,		
Page		9		
Advanced No	lotifications			
The 'Manage '	Target Event' privilege is require	d to trigger advanced notifi	ation for targets.	
Name	ř	Descri	tion	Suppo Repea
Simon_t	test ESM (SNMPu1 Tran)			
	Troot Comment ( trup)	Simon's	est ESM SNMPV1 Station	
Mygues Repeat Notif bmit Corrective	st199 (SNMPv3 Trap) ifications(Not specified) tive Action	Simon's	st ESM SNMPV1 Station	
Mygues Repeat Notif Ibmit Corrective Relect a corrective Relect co	st199 (SNIIPv3 Trap) fications (Not specified) tive Action re action to be run when rule cor tive action	Simon s	st ESM SNMPV1 Station	
Mygues Repeat Notif Ibmit Corrective Select a corrective Corrective action	st199 (SNIIPv3 Trap) fications (Not specified) tive Action re action to be run when rule cor tive action sion will use preferred credentals	nditions are met. Only one of s of CLOUDADM (rule set o	st ESM SNMPV1 Station rrective action is allowed.	
Mygues Repeat Notif ubmit Corrective select corrective Corrective active ear events	sti99 (SNIIP/3 Trap) sti99 (SNIIP/3 Trap) ifications(Not specified) tive Action twe action to be run when rule con twe action	allions are met. Only one of CLOUDADM (rule set o	rrective action is allowed.	
Mygues Mggues Mg	et199 (SMIPv3 Trap) fifeations(Rot specified) tive Action to a eacton to be run when rule cor tive action tive action tive action tive action time action time action the profession and the action construction action action to action action time a	allions are met. Only one of s of CLOUDADM (rule set o en the underlying issue is o ually cleared by administra	sit ESM SNMPV1 Station  rrective action is allowed.  rref to execute scripts on respective largets. ared and will generate a clear event. These types of events cannot be cleared using this option. However, for some events, such as metric alerts that are generate rs. This action can be used to automate the behavior.	d by mining a log file, it is not feasible for Enterprise Manager to detect when the underly
Mygues Repeat Notif thmit Corrective Select corrective Corrective action Corrective action of the select of the se	at 199 (SIMIP-3 Trap) fifcations(Itot specified) two Action two action to be run when rule cor two action two will use preferred credentials Enterprise Manager detects when This type of events must be man nently	nditions are met. Only one of s of CLOUDADM (rule set o en the underlying issue is o usally cleared by administra	sat ESM SNUPV1 Station rrective action is allowed. rrective action is allowed. rrer) to execute scripts on respective targets. ared and will generate a clear event. These types of events cannot be cleared using this option. However, for some events, such as metric alerts that are generate rs. This action can be used to automato this behavior.	d by mining a log file, it is not feasible for Enlerprise Manager to detect when the underly
Mygues Mygues Repeat Notif Ibmit Corrective Select corrective Corrective actic corrective actic ear events r most events, E loared. T Clear perman revert to Even reverts be for	st199 (SNIM-V3 Trap) st199 (SNIM-V3 Trap) fictations(Ido tspecified) tive Action te action to be run when rule cor tive action is will use preferred credentials Enterprise Manager detects with this type of events must be man mently nt Connectors	sintons are met. Only one of s of CLOUDADM (rule set o an the underlying issue is o ually cleared by administra samenet systems.	sat ESK SNUPV1 Station rrective action is allowed. 	d by mining a log file, it is not feasible for Enterprise Manager to detect when the underly
Mygues Mgues	et 199 (SNIMPA3 Trap) fifications (Not specified) two Action e action to be run when rule cor two action ion will use preferred credentials Enlerprise Manager detects whe This type of events must be man nently at Connectors rwarded to thick party event man nectors	smon a sement. Only one c so of CLOUDADM (rule set o on the underlying issue is c usally cleared by administra nagement systems.	irrective action is allowed.  irrective action is allowed.  irrective action is allowed.  ared and will generate a clear event. These types of events cannot be cleared using this option. However, for some events, such as metric alerts that are generate ra. This action can be used to automate this behavior.  Selected Connectors	d by mining a log file, it is not feasible for Enterprise Manager to detect when the underly

#### Figure 56: Add Conditional Actions – Bottom

The next Incident Rule is involved when a metric threshold is exceeded for both a warning and critical state. This metric is the % used figure for the Oracle VM Server repo file system. This rule is used in conjunction with the Monitoring Template example described earlier. The rule will create an Incident within the Incident Manager of any System this target is associated with. By default all Critical Warnings are displayed, however I feel a Warning that my file system is becoming full is worthy of an incident being generated.

Figure 57 shows the rule set where we are monitoring all targets of type Oracle VM Server Pool where this metric is captured.

sident Dules All Enternice Dules				
cident Rules - All Enterprise Rules				
lit Rule Set				Save Cance
ule set is a collection of rules that applies to a common set of object sending e-mails, creating incidents, updating incidents, and creatin	cts, for example, targets, jobs, and templates. A rule c ig tickets.	ontains a set of automated actions to be taken on specific e	vents, incidents or problems. For example, individual rules can respond to incoming or updated events, incidents, or problems, and t	then take actions such
* Name OVM_Servpool_Repo_file_system		Enabled 🔽	✓ Steps to define a Rule set	
escription		Owner OVMPM How is this used?	Provide Name, Description and Type Enterprise rule sets represent business processes to manage events, incidents and problems, it allows all actions including cre incidents, Personal indification use set is for rules to send e-mails to current user only.	eate and update of
		a	Choose source - e.g., Targets, Jobs Choose set of targets for the events, incidents or problems which would match the rules in the rule set. You can choose source as well -e.g. Jobs.	ces other than targets
upplies To Targets			Add Rules Add rules to define specific conditions to match events, incidents or problems. Rules also identify the actions to be taken when e.g. e-mail. create incident.	the conditions match -
▲ Targets elect targets to which this rule set applies. You can exclude speci ○ All targets	ific targets from the scope - for example, all database	targets except "MyDevDB".		
All targets of types Oracle VM Server Pool				
Filter by lifecycle status				
Excluded targets				
			4	
+ Add 🔀 Remove	05/202		50	ource object selection
+ Add X Remove Name	Туре		30	,,

Figure 57: Edit an Incident Rule

Figure 58 shows where we are interested in a specific metric event and the severity, which is both Warning and Critical.



DRACLE Enterpr	rise Manager Cloud Control 13	c					C	LOUDADM	A 🕶
dit Rule Set - OVM_S	ervpool_Repo_file_syste	em							
•									
Select Events Ad	d Actions Specify Name and Description	Review							
Edit Rule - Server_Po	ol_repo_FS: Select Eve	nts					Back Step 1 of	4 Next	Can
Type Metric Alert	0								
O All events of type N	letric Alert								
Specific events of	type Metric Alert								
Selected events of type Me	tric Alert								
🕂 Add 📝 Edit 🗙	Remove								
Notrie Group	Matric		Tarnot Tuno	Souority	Obj	ects	Corrective	Action Sta	atus
meane of oup	meure		larget type	Seventy	Selected	Excluded	On Critical	On Wa	/arning
	Contraction and the contraction of the		Oversite VIII Control	Colling Latteration	A P addresses	10000			

#### Figure 58: Select Events

Figure 59 shows that we create a new incident. There are also options to compress events into a single incident. We recommend you review the documentation and your end use cases for further configuration.

ORACLE' Enterprise Manager Cloud Control 13c	CLOUDA	DM 👻 🚥
Add Actions		
Add Conditional Actions	Continue	Cancel ^
Define actions to be taken when an event matches this rule.		
Conditions for actions You can define the actions to apply whenever the rule matches or apply them conditionally.  Always execute the actions		
O only execute the actions if specified conditions match		
Create Incident or Update Incident If there is no incident associated with the event, you could create one and optionally, set the incident owner and priority. If an incident exists, you could update the incident. Create Incident (If not associated with the incident Update Incident Update Incident Update Incident Update Incident		
Each event creates a new incident     Compress events into an incident		
Initial Setup     Assign to     Q     Set priority to     V		
▶ Create Ticket		



#### **Corrective Actions**

Corrective Actions enable you to specify automated responses to metric alerts. You define corrective actions for individual metrics for monitored targets. Further information is found in the <u>documentation</u>.

To access the Corrective Actions framework from the Oracle Enterprise Manager UI, navigate to Enterprise > Monitoring > Corrective Actions.

ORACLE' Enterprise Manager Cloud Control	13c		Enter	prise 🔻 🔘 Targets 🔻	Eavorites •	History •	Ö Setup ▼ C	R 🛔	CLOUDADM ¥ ····
Job									
Corrective Actions Corrective Action Type All  Name	Owner All 🔽 Target Type All	√ Go					Page Refreshed	Nov 15, 2017	9:51:17 AM MST 💍
Create Like Edit Publish Create next version Delete Create Li	orary Corrective Action OS Command								
Select Name	Description	Version	Status	Corrective Action Type	Owner	Target Type		event Type	References
O OVM RUN MY FILESYSTEM SEARCH SCRIPT	Script to run if the filesystem starts getting full to look for clean up options.	1	Published	OS Command	CLOUDADM	Oracle VM Se	rver Pool 1	Metric Alert	0
RUN MY FILESYSTEM SEARCH SCRIPT	Script to run if the filesystem starts getting full to look for clean up options.	1	Published	OS Command	CLOUDADM	Host		Metric Alert	0





Here I have created two Corrective Actions, which run simple scripts with respect to clean up if file systems are becoming full. There are two separate actions, which are available to both the Host and Oracle VM Server Pool targets. Corrective Actions can also be applied at the target level; for example, the Oracle VM Server Pool target where I run my clean up script if my metric threshold reaches critical on % used space.

Firstly, I need to access the Oracle VM Server Pool target Monitoring page where my Monitoring Template is set. From the Oracle Enterprise Manager UI, go to Targets > All Targets and on the left hand page select the Oracle VM Server Pool you are interested in.

From the Oracle VM Server Pool page menu click on Monitoring > Metric and Collection Settings. Figure 61 shows the Used Space (%) metric. We click on the pencils icon on the right hand side.

ORACLE Enterprise Manager Cloud Control 13c			Enterprise 🔻	<u> </u>	★ Eavorites ▼	History -	Setup •	0, 1	CLOUDADM ¥ ····
🕈 pool2 🚯									ovm14m1.us.oracle.com
👯 VM Server Pool 👻									
Oracle VM Server Pool: pool2 > Metric and Collection Settings Metric and Collection Settings									Cancel OK
Metrics Other Collected Items									
IP Consider using Adaptive Thresholds for performance metrics or Time-base           View         Metrics with thresholds	ed Static Thresholds for metrics whose thresholds vary based on target workload. Configur	e these thresholds in the "Advanc	ed Threshold Manageme	nt" page.					
Metric	Comparison Operator	Warning Threshold	Critical Threshold	Corrective Actions	Colle	action Schedule			Edit
V pool2									
					Trigg	gered Collection			
Used Space (%)	>	70	80	None					
V Response					Ever	y 1 Minute			
Status	-		Down	None					de la companya de la comp
TIP Empty Thresholds will disable alerts for that metric.									
Related Links									
Advanced Threshold Management Pending Apply Operations	Create Monitoring Template Using Target			Past Apply	Operations				Cancel OK

Figure 61: Oracle VM Server Pool Metric and Collections Settings

Figure 62 shows us the Monitored Objects section where we need to click on Edit.

ne table lists all Target ID/Mountpoint obj	ects monitored for this metric. You can specify different th	reshold settings for each Target ID/Mountpoint obj	ect.			مبيبة أعما
Edit Remove						Add Neorde
Select Target ID	Mountpoint	Comparison Operator	Warning Threshold	Critical Threshold	Corrective Action	
All others	All others	>	70	80	None	
TIP Empty Thresholds will disable alerts TIP You can optionally use "%" wildcar TIP If the object name contains "%" or	for that metric. I'd character to represent multiple objects. (Example: /u19 "\", specify it as "\%" or "\\" (Example: 'c:\temp' needs to	6 represents /u11, /u12 etc) b be entered as "c:\\temp")				
	<i>₽</i>					Cancel Contin

Figure 62: Oracle VM Server Pool Monitored Objects

Figure 63 shows where we can click to add a Corrective Action for Warning or Critical thresholds being reached.



A	
T pool2	
🛄 VM Server Pool 👻	
Oracle VM Server Pool: ) Edit Advanced Se	<pre>bool2 &gt; Metric and Collection Settings &gt; Edit Advanced Settings: Used Space (%) ttings: Used Space (%)</pre>
Target ID All others Mountpoint All others	
Corrective Actions	
Warning <none> Add Critical <none> Add</none></none>	
Allow only one of	prrective action for this metric to run at any given time
Advanced Threshold	Settings
Comparison Operator	> ~
Warning Threshold	70
Critical Threshold	80
Number of Occurrences	1
Collection Schedule	Triggered Collection
C TIP Empty Threshold	s will disable alerts for that metric.
Template Override	
Prevent metric setti	ngs on this page from being changed when a monitoring template is applied to the target

Figure 63: Add a Corrective Action for Warning or Critical

Figure 64 shows where can select a Corrective Action along with the Credentials to run the script by; when set click continue to finish. With the Corrective Action in this example, a script will be triggered when the Warning metric threshold exceeds the set limit.



🕈 pool2 🚯	
🛄 VM Server Pool 👻	
Edit Advanced Set	tings: Used Snace (%)
Target ID All others Mountpoint All others	angot osca opace (10)
Target ID All others Mountpoint All others Corrective Actions	angot osca opace (19)

Figure 64: Select a Corrective Action for Warning

### Conclusion

This paper describes how to monitor an Oracle VM Manager host as a system including all the key components such as the Oracle Linux host, Database and Application Services. It is possible to monitor groups of Oracle VM Managers using this System approach.

In summary this papers described the following:

- Installed and configured an Oracle Enterprise Manager Agent on the Oracle VM Manager host
- Installed the latest Virtualization (VT) and MySQL plug-in on the Oracle Enterprise Manager Server and Oracle Enterprise Manager Agent on the Oracle VM Manager host
- Registered the Oracle VM Manager with the Oracle Enterprise Manager Infrastructure Cloud Portal
- Created a monitoring user for the Oracle VM Manager MySQL repository database
- Discovered the Oracle VM Manager MySQL repository database as a target within Oracle Enterprise Manager
- Discovered the Oracle VM Manager Weblogic Domain and Server
- Created an Oracle VM Manager System within Oracle Enterprise Manager
- Configured the Oracle VM Manager System with custom monitoring charts, monitoring templates, incident rules and corrective actions



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How to Monitor Oracle VM Manager with Oracle Enterprise Manager 13c

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