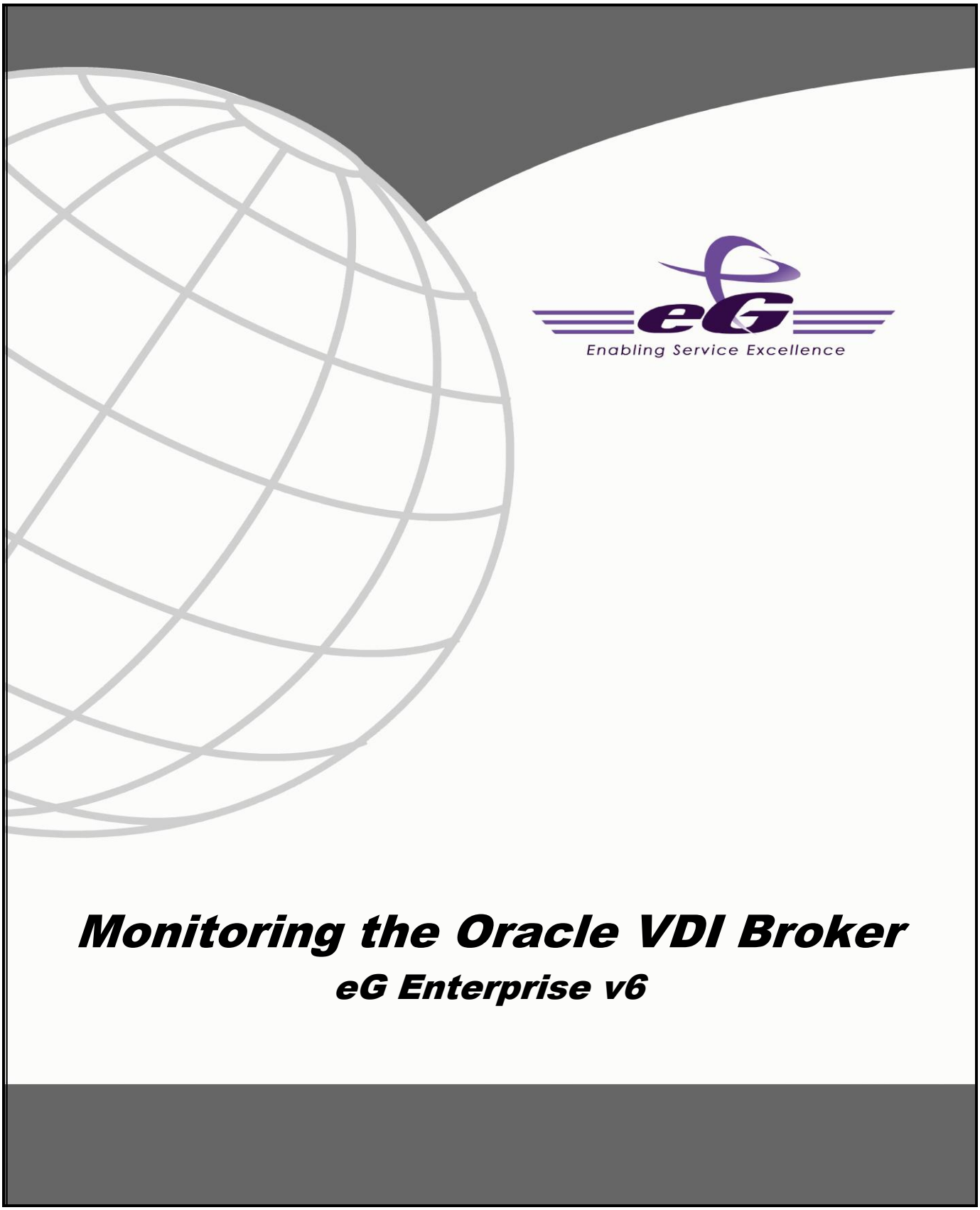

Monitoring the Oracle VDI Broker

eG Enterprise v6

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Chapter 1

Monitoring the Oracle VDI Broker

Oracle VDI (Virtual Desktop Infrastructure) provides desktop virtualization to replace personal computers with virtual machines (VMs) on a server. Users can access these VMs though any RDP client, or through the web via Sun Secure Global Desktop (SGD).

Oracle Virtual Desktop Infrastructure is made up of four main components: virtualization platform, session management (Oracle VDI Core), desktop access clients, and storage.

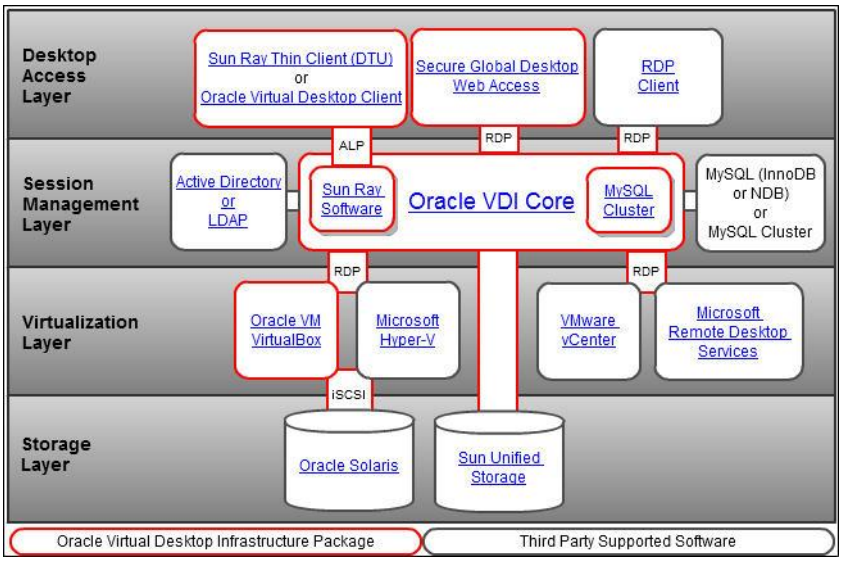

Figure 1.1: Architecture of the Oracle Virtual Desktop Infrastructure

The central component of the Oracle Virtual Desktop Infrastructure is the Oracle VDI Core (Session Management). The Oracle VDI Core provides all the functionality needed to build and manage large scale virtual machine deployments. In addition to its management capabilities, the Oracle VDI Core is also responsible for the brokering of virtual desktops on behalf of desktop access clients.

By integrating with Active Directory, the Oracle VDI Core is able to provide support for assignment of virtual desktops to existing users and groups within an organization. The Oracle VDI Core configuration data and runtime information is stored in a MySQL database, which may be shared across multiple Oracle VDI Core instances on the network. This database configuration ensures access to the Oracle VDI Core even in failover scenarios.

If the Oracle VDI Core is unavailable or is unable to validate user logins promptly, the users will only be allowed delayed access to their desktops; sometimes, they may even be denied desktop access. This in turn is bound to affect the user experience with the Oracle VDI service. To prevent this, VDI administrators need to continuously monitor the availability and overall health of the Oracle VDI Core, proactively detect performance issues, and promptly resolve the issues, before users sense any dip in performance.

eG Enterprise offers a 100%, web-based *Oracle VDI Broker* monitoring model, which enables both *agent-based* and *agentless* monitoring of the performance of the Oracle VDI Core.

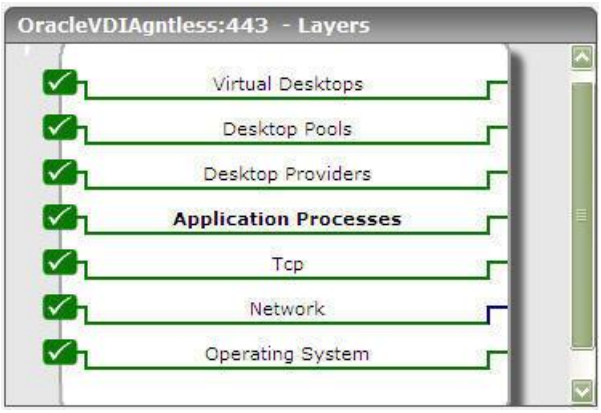

Figure 1.2: Layer model of the Oracle VDI Broker

Each layer of the model depicted by Figure 1.1 above is mapped to a variety of tests that periodically check the availability of the broker (i.e., the Oracle VDI Core) and its ability to provision desktops, so that deviations are detected early and fixed quickly.

To monitor the broker, the eG agent can be deployed on the system hosting the broker (in case of an *agent-based* approach), or can be installed on any remote Windows/Linux/Solaris host in the target environment. Once installed and started, the eG agent uses certain privileged VDA (Virtual Desktop Access) commands for pulling out the performance data related to the broker. To enable the eG agent to run these commands, certain pre-requisites need to be fulfilled. These pre-requisites differ according to the monitoring approach (agent-based or agentless) employed for monitoring the broker.

1.1 Pre-requisites for Monitoring the Oracle VDI Broker in an Agent-based Manner

In case of an agent-based approach, the following pre-requisites need to be fulfilled to enable the eG agent to run the VDA commands:

- A **sudo** package has to be installed on the broker host; to install this package, do the following:
  - Login to the Solaris system hosting the broker as a *root* user.
  - To download the **sudo** package, connect to the URL: http://sysinfo.bascomp.org/solaris/installing-sudo-on-solaris/
  - If the Solaris processor is Intel based, download the file **TCMsudo-1.8.2-i386.pkg.gz** from the web site mentioned above. On the other hand, if the Solaris host uses a SPARC processor instead, download the file **TCMsudo-1.8.2-sparc.pkg.gz** from the web site.
  - Download the chosen file to any location on the broker host (say, **/tmp**).

- From the Solaris prompt, switch to the directory hosting the downloaded package and unzip the compressed package using the following command:

  gunzip <package_name>

  For instance:

  gunzip TCMsudo-1.8.2-sparc.pkg.gz

- Then, install the package by issuing the following command at the prompt:

  pkgadd -d <package name>

  For instance:

  pkgadd –d TCMsudo-1.8.2-sparc.pkg

- Once installation is complete, you will find that the package is installed in the **/usr/local/** folder on the Solaris host.

- All the tests run by the eG agent should be configured with the full path to the install directory of the **sudo** package;

1.2 Pre-requisites for Monitoring the Oracle VDI Broker in an Agentless Manner

In case of an agentless approach, the following pre-requisites need to be fulfilled to enable the eG agent to run the VDA commands:

- A **sudo** package has to be installed on the broker host; to know how to install the **sudo** package, refer to Section 1.1 above.
- After the **sudo** package is installed, perform the following steps on the broker host:
  - Login to the broker host as a *root* user;
  - At the command prompt of the host, issue the following command to create a new user:

    useradd –d /export/home/<username> –m <username>

    For instance:

    useradd –d /export/home/eguser –m eguser

  - Next, issue the following command to set a password for the above user:

    passwd <username>

  - When prompted to provide the password, specify the same.
  - Then, proceed to edit the **sudo** script by issuing the following command:

    usr/local/sbin/visudo

  - Add the following entries to the script:

    <username> ALL=NOPASSWD:/opt/SUNWvda/sbin/vda
    <username> ALL=NOPASSWD:/usr/sbin/cacaoadm

<username> ALL=NOPASSWD:/opt/SUNWvda/sbin/vda-db-status
<username> ALL=NOPASSWD:/opt/SUNWvda/sbin/vda-webadmin

- All the tests run by the eG agent should be configured with the full path to the install directory of the **sudo** package;

Once these pre-requisites are fulfilled, the eG agent will use the **sudo** package to run the VDA commands and extract the measures. Using the measures reported, administrators can find quick and easy answers for the following performance queries:

- Is the RDP Broker Service online or offline?
- Is the common agent container operational? If so, how many processes are running for the container? Are these processes making optimal or abnormal use of the broker's resources?
- Were any errors captured in the broker recently?
- Is the VDI Core Service enabled? If so, what is the 'Availability' state of the service?
- Is the VDI manager running?
- Are the processes running for the VDI manager consuming resources excessively?
- Is the broker's MySQL database available?
- Is any desktop provider unresponsive? If so, which one?
- Is any provider experiencing a resource contention currently?
- Is adequate space available on all storage servers? Is any storage server experiencing a space crunch currently? If so, which one is it, and how many desktops are using that server?
- Is any pool in a disabled state?
- Which pools have cloning enabled?
- Are too many cloning jobs running on any pool?
- Which pool has the maximum number of powered-off or suspended desktops? What are the names of these desktops?
- Which pool has desktops with errors? What are the names of these desktops?
- Are there any unknown desktops?
- Which desktops have users assigned to them?
- To how many desktops have users currently logged in?
- Which desktops are currently idle?
- Which desktops are currently unresponsive?
- What is the RAM, disk space and video memory configuration of every desktop managed by the broker?

The sections that follow will discuss the top 4 layers of Figure 1.1, as the other layers have already been discussed in the *Monitoring Unix and Windows Servers* document.

1.3 The Application Processes Layer

Besides monitoring the TCP connections to and from the broker host, the tests mapped to this layer also help report the current status of the following critical broker services:

- The VDI Core Service
- The Common Agent Container
- The RDP Broker service
- The VDI Manager

In addition, the test also monitors the log files of the broker and captures recent errors and warnings.

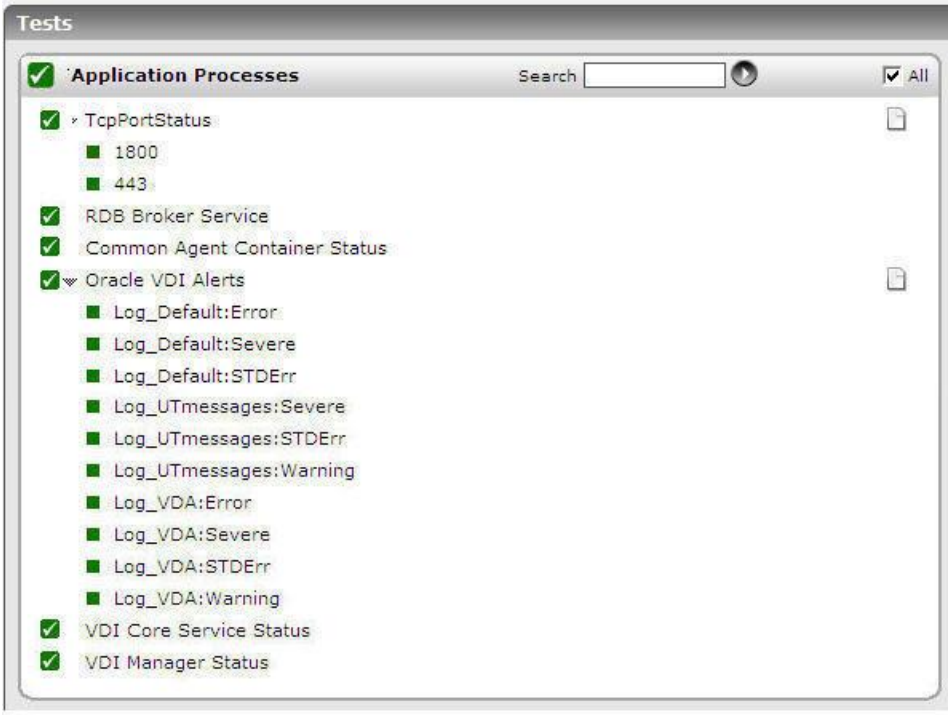

Figure 1.3: Tests mapped to the Application Processes layer

1.3.1.1 RDP Broker Service Test

Oracle Virtual Desktop Infrastructure includes a built-in RDP broker that enables easy desktop access leveraging the Remote Desktop Protocol (RDP). This way, users can take advantage of existing RDP clients (for example, the remote desktop connection in Windows XP) for accessing desktops.

1. The RDP client first contacts the Oracle VDI RDP broker (passing over any information like username, password, etc).
2. The RDP broker will then contact the Oracle VDI Core service on behalf of the client and will ask to startup the desired desktop.
3. The Oracle VDI Core service will first verify the username/password combination if client authentication is enabled on the service side (default).
4. If authentication succeeds, the corresponding desktop will be started up and the Oracle VDI Core service returns the IP and optionally RDP port of the virtual machine (VM) running the desktop.
5. This information is used by the RDP broker to construct an RDP Server Redirection Packet containing either:
   - the VM host/IP address as the server to redirect to (if using Windows RDP, as done for VMware Infrastructure 3)

- or a routing token containing encoded IP address and RDP port information (if using the VirtualBox RDP, also known as VRDP)

The latter is necessary, because VRDP does not use the standard Windows RDP port. Thus the RDP broker needs to hand back both the IP and the RDP port information.

6. Finally, this RDP redirection packet is sent back to the RDP client and the client will redirect accordingly.

If the RDP Broker is not running then users connecting via RDP clients may not be able to access their desired desktops. This test promptly alerts administrators if the RDP Broker service stops, so that the service can be started before users complain.

Purpose	Monitors the Cacao and reports its current status		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.3 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box. 5. **DETAILED DIAGNOSIS** - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: ➢ The eG manager license should allow the detailed diagnosis capability ➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.		
Outputs of the test	One set of results for the Oracle VDI broker being monitored		
Measurements made by the	**Measurement**	**Measurement Unit**	**Interpretation**

test	**RDP broker service status:** Indicates whether the RDP broker service is currently running or not.		If the broker service is running, then, then this measure will report the value *Online*. If the broker service is not running, then this measure will report the value *Offline*. The table below lists the numeric values that correspond to each of the states mentioned above: **State** / **Numeric Value** Online / 100 Offline / 0 **Note:** Typically, this measure will report the **State**s indicated in the table above as its values. However, in the graph of this measure, the online/offline states will be represented using their numeric equivalents only - i.e., *0* and *100*. The detailed diagnosis of this measure reveals when the RDB Broker service started and the full instance name of the service.

1.3.1.2 Common Agent Container Status Test

The main Oracle VDI Core service runs as a module within the Common Agent Container (Cacao). If you encounter any issues while working with the Oracle VDI broker, you should first check the status of Cacao as well as the status of the Oracle VDI Core service module.

This test monitors the Cacao and reports its current status.

Purpose	Monitors the Cacao and reports its current status
Target of the test	An Oracle VDI Broker
Agent deploying the test	An internal/remote agent

<table>
<tr><td>Configurable parameters for the test</td><td colspan="3">1. TEST PERIOD - How often should the test be executed
2. HOST - The host for which the test is to be configured
3. PORT – Refers to the port used by the specified HOST.
4. SUDOPATH - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a sudo package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the sudo package in the SUDOPATH text box.
5. DETAILED DIAGNOSIS - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option.
The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled:
➢ The eG manager license should allow the detailed diagnosis capability
➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.</td></tr>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for the Oracle VDI broker being monitored</td></tr>
<tr><td>Measurements made by the</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
</table>

<table>
<tr><td>test</td><td>Agent status:
Indicates whether the Cacao is currently running or not.</td><td></td><td>If the Cacao is running, then, then this measure will report the value Operational. If the Cacao is not running, then this measure will report the value Not Operational.
The table below lists the numeric values that correspond to each of the states mentioned above:
<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Operational</td><td>100</td></tr><tr><td>Not Operational</td><td>0</td></tr></table>
Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the operational state of the Cacao will be represented using the numeric equivalents only - i.e., 0 and 100.</td></tr>
<tr><td></td><td>Number of processes:
Indicates the number of processes currently running for the Cacao.</td><td>Number</td><td>To know which processes are currently running for the cacao, use the detailed diagnosis of this measure.</td></tr>
<tr><td></td><td>Memory utilization:
Indicates the percentage of memory utilized by the Cacao.</td><td>Percent</td><td>Ideally, the value of this measure should be low. A very high value indicates that too much memory is being consumed by the Cacao processes.</td></tr>
<tr><td></td><td>CPU utilization:
Indicates the percentage of CPU consumed by the Cacao.</td><td>Percent</td><td>Ideally, the value of this measure should be low. A very high value indicates that too much CPU is being consumed by the Cacao processes.</td></tr>
</table>

1.3.1.3 Oracle VDI Alerts Test

This test scans the VDI logs for messages of configured patterns, and reports the count of errors/warnings that were recently logged in the files.

Purpose	Monitors multiple alert log files for different patterns
Target of the test	An Oracle VDI Broker

Agent deploying the test	An internal/remote agent
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured. 3. **PORT** – The port at which the server listens 4. **LOGFILE** - Specify the path to the log file to be monitored. For eg., */user/john/new_john.log*. Multiple log file paths can be provided as a comma-separated list - eg., */user/john/critical_egurkha.log,/tmp/log/major.log*. Also, instead of a specific log file path, the path to the directory containing log files can be provided - eg., */user/logs*. This ensures that eG Enterprise monitors the most recent log files in the specified directory. Specific log file name patterns can also be specified. For example, to monitor the latest log files with names containing the strings 'dblogs' and 'applogs', the parameter specification can be, */tmp/db/*dblogs*,/tmp/app/*applogs**. Here, '*' indicates leading/trailing characters (as the case may be). In this case, the eG agent first enumerates all the log files in the specified path that match the given pattern, and then picks only the latest log file from the result set for monitoring. Your **LOGFILE** specification can also be of the following format: *Name@logfilepath_or_pattern*. Here, *Name* represents the display name of the path being configured. Accordingly, the parameter specification for the 'dblogs' and 'applogs' example discussed above can be: *dblogs@/tmp/db/*dblogs*,applogs@/tmp/app/*applogs**. In this case, the display names 'dblogs' and 'applogs' will alone be displayed as descriptors of this test. Every time this test is executed, the eG agent verifies the following: ➢ Whether any changes have occurred in the size and/or timestamp of the log files that were monitoring during the last measurement period; ➢ Whether any new log files (that match the **LOGFILE** specification) have been newly added since the last measurement period; If a few lines have been added to a log file that was monitored previously, then the eG agent monitors the additions to that log file, and then proceeds to monitor newer log files (if any). If an older log file has been overwritten, then, the eG agent monitors this log file completely, and then proceeds to monitor the newer log files (if any). 5. **SEARCHPATTERN** - Enter the specific patterns of alerts to be monitored. The pattern should be in the following format: *<PatternName>:<Pattern>*, where *<PatternName>* is the pattern name that will be displayed in the monitor interface and *<Pattern>* is an expression of the form - *expr* or expr or *expr or expr*, etc. A leading '*' signifies any number of leading characters, while a trailing '*' signifies any number of trailing characters. For example, say you specify ORA:ORA-* in the SEARCHPATTERN text box. This indicates that "ORA" is the pattern name to be displayed in the monitor interface. "ORA-*" indicates that the test will monitor only those lines in the alert log which start with the term "ORA-". Similarly, if your pattern specification reads: offline:*offline, then it means that the pattern name is offline and that the test will monitor those lines in the alert log which end with the term offline.

	6. **DD FREQUENCY** - Refers to the frequency with which detailed diagnosis measures are to be generated for this test. The default is *1:1*. This indicates that, by default, detailed measures will be generated every time this test runs, and also every time the test detects a problem. You can modify this frequency, if you so desire. Also, if you intend to disable the detailed diagnosis capability for this test, you can do so by specifying *none* against **DD FREQUENCY**. 6. **DETAILED DIAGNOSIS** - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: ➢ The eG manager license should allow the detailed diagnosis capability ➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.
Outputs of the test	One set of results for every **LOGFILE** and **SEARCHPATTERN** combination

Measurements made by the test	Measurement	Measurement Unit	Interpretation
	Recent errors: Indicates the number of errors that were added to the log file when the test was last executed.	Number	The value of this measure is a clear indicator of the number of "new" alerts that have come into the log file of the monitored broker. The detailed diagnosis of this measure, if enabled, provides the detailed descriptions of the recent errors of the configured patterns.

1.3.1.4 VDI Core Service Status Test

The central component of Oracle Virtual Desktop Infrastructure is the Oracle VDI Core. The Oracle VDI Core provides all the functionality needed to build and manage large scale virtual machine deployments. In addition to its management capabilities, the Oracle VDI Core is also responsible for the brokering of virtual desktops on behalf of desktop access clients.

The Oracle VDI Core component is driven by the VDI Core Service that runs as a module within the Common Agent Container (Cacao). If you encounter any issues while working with the Oracle VDI broker, you should first check the status of Cacao as well as the status of the Oracle VDI Core service module.

This test monitors the VDI Core Service and reports its current status.

Purpose	Monitors the VDI Core Service and reports its current status

<table>
<tr><td>Target of the test</td><td colspan="3">An Oracle VDI Broker</td></tr>
<tr><td>Agent deploying the test</td><td colspan="3">An internal/remote agent</td></tr>
<tr><td>Configurable parameters for the test</td><td colspan="3">1. TEST PERIOD - How often should the test be executed
2. HOST - The host for which the test is to be configured
3. PORT – Refers to the port used by the specified HOST.
4. SUDOPATH - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a sudo package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the sudo package in the SUDOPATH text box.</td></tr>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for the Oracle VDI broker being monitored</td></tr>
<tr><td rowspan="2">Measurements made by the test</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
<tr><td>Operational state:
Indicates the current operational state of the Oracle VDI core service.</td><td></td><td>This measure reports the value Enabled or Disabled depending upon the current state of the VDI core service.
The table below lists the State values reported by this measure and the numeric values that correspond to each of the states:<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Enabled</td><td>100</td></tr><tr><td>Disabled</td><td>0</td></tr></table>Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the operational state of the VDI core service will be represented using the numeric equivalents only - i.e., 0 and 100.</td></tr>
</table>

<table>
<tr>
<td></td>
<td>Administrative state:
Indicates the current administrative state of the VDI core service.</td>
<td></td>
<td>This measure reports the value Locked or Unlocked depending upon the current administrative state of the VDI core service.
The table below lists the State values reported by this measure and the numeric values that correspond to each of the states:
<table>
<tr><th>State</th><th>Numeric Value</th></tr>
<tr><td>Unlocked</td><td>100</td></tr>
<tr><td>Locked</td><td>0</td></tr>
</table>
Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the administrative state of the VDI core service will be represented using the numeric equivalents only - i.e., 0 and 100.</td>
</tr>
<tr>
<td></td>
<td>Availability:
Indicates the current availability status of the Oracle VDI core service.</td>
<td></td>
<td>If the VDI core service is not currently operational - i.e., if the Operational state measure of this test reports the value Disabled - then the Availability measure will not report any values; in such a case therefore, this measure will not appear in the eG monitoring console.
On the other hand, if the Operational state of the VDI core service is Enabled, then this test will report one of the following values for the Availability measure:
➢ Dependency
➢ Off_line
➢ Failed</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td></td>
<td>The numeric values that correspond to each of the Availability states listed above are discussed in the table below:
<table>
<tr><th>State</th><th>Numeric Value</th></tr>
<tr><td>Dependency</td><td>1</td></tr>
<tr><td>Off_line</td><td>2</td></tr>
<tr><td>Failed</td><td>3</td></tr>
</table>
Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the availability state of the VDI core service will be represented using the numeric equivalents only - i.e., 1 to 3 only.</td>
</tr>
<tr>
<td></td>
<td>Module health:
Indicates the current health of the VDI core service module.</td>
<td></td>
<td>The value of this measure will either be Good health or Bad health, depending upon how healthy the VDI core service module currently is.
The table below lists the State values reported by this measure and the numeric values that correspond to each of the states:
<table>
<tr><th>State</th><th>Numeric Value</th></tr>
<tr><td>Good health</td><td>100</td></tr>
<tr><td>Bad health</td><td>0</td></tr>
</table>
Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the module health will be represented using the numeric equivalents only - i.e., 0 and 100.</td>
</tr>
</table>

1.3.1.5 VDI Manager Status Test

The Oracle VDI Manager is a web administration tool that enables Oracle VDI administrators to configure user groups, desktop pools, and hypervisor and storage resources. Whenever administrators

complaint of being unable to access this web-based interface, you can use this test to verify whether the VDI manager is running or not, and if running, whether it is consuming resources optimally or not.

Purpose	Reports whether the VDI manager is running or not, and if running, whether it is consuming resources optimally or not		
Target of the test	An Oracle VDI Broker		
Agent deploying the test	An internal/remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box. 5. **DETAILED DIAGNOSIS** - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: ➢ The eG manager license should allow the detailed diagnosis capability ➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.		
Outputs of the test	One set of results for the Oracle VDI broker being monitored		
Measurements made by the	**Measurement**	**Measurement Unit**	**Interpretation**

<table>
<tr><td>test</td><td>Status:
Indicates whether the VDI manager is currently running or not.</td><td></td><td>If the VDI manager is running, then this measure will report the value Running. If the VDI manager is not running, then this measure will report the value Not running.
The table below lists the numeric values that correspond to each of the states mentioned above:
<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Running</td><td>100</td></tr><tr><td>Not running</td><td>0</td></tr></table>
Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the status of the VDI manager will be represented using the numeric equivalents only - i.e., 0 and 100.
Use the detailed diagnosis of this measure to know which processes are currently running for the Oracle VDI Manager (web service).</td></tr>
<tr><td></td><td>Memory utilization:
Indicates the percentage of memory utilized by the VDI manager service.</td><td>Percent</td><td>Ideally, the value of this measure should be low. A very high value indicates that too much memory is being consumed by the VDI manager.</td></tr>
<tr><td></td><td>CPU utilization:
Indicates the percentage of CPU consumed by the VDI manager service.</td><td>Percent</td><td>Ideally, the value of this measure should be low. A very high value indicates that too much CPU is being consumed by the VDI manager.</td></tr>
</table>

1.4 The Desktop Providers Layer

Desktop providers encapsulate the details of the underlying virtualization platform. Typically, the Oracle VDI broker manages desktops provided by VMware vSphere/ESX servers, Microsoft Hyper-V, and Oracle VM VirtualBox. This layer focuses on the health of the broker's database and the desktop providers managed by the broker.

Using the tests mapped to this layer, you can receive prompt alerts when the following occur:

- When the broker's database becomes unavailable;

- When a desktop provider is suddenly rendered unresponsive or is experiencing errors;
- If a desktop provider experiences a severe resource contention;

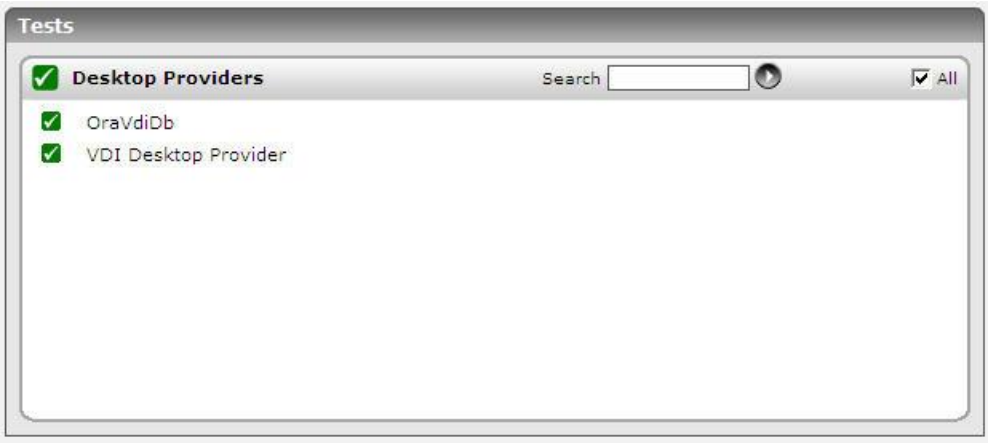

Figure 1.4: The tests mapped to the Desktop Providers layer

1.4.1 OraVdiDb Test

The Oracle VDI Core configuration data and runtime information is stored in a MySQL database, which may be shared across multiple Oracle VDI Core instances on the network. This database configuration ensures access to the Oracle VDI Core even in failover scenarios.

Since non-availability of the database can obstruct the normal functioning of the VDI core, it is imperative to periodically check the availability of the MySQL database. This test runs availability checks on the MySQL database at configured intervals, and promptly alerts administrators whether the database is available or not. In a high availability configuration of the VDI core, you can use this test to also determine whether the database is the master or slave of a MySQL cluster.

Purpose	Runs availability checks on the MySQL database at configured intervals, and promptly alerts administrators whether the database is available or not. In a high availability configuration of the VDI core, you can use this test to also determine whether the database is the master or slave of a MySQL cluster.
Target of the test	An Oracle VDI Broker
Agent deploying the test	An internal/remote agent
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box.

<table>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for the Oracle VDI broker being monitored</td></tr>
<tr><td>Measurements made by the test</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
<tr><td></td><td>Database status:
Indicates whether the database is currently available or not.</td><td></td><td>If the database is available, then this measure will report the value Up. If the database is not available, then this measure will report the value Down.
The table below lists the numeric values that correspond to each of the states mentioned above:<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Up</td><td>1</td></tr><tr><td>Down</td><td>0</td></tr></table>Note:
Typically, this measure will report the States indicated in the table above as its values. However, in the graph of this measure, the status of the database will be represented using the numeric equivalents only - i.e., 0 and 1.</td></tr>
<tr><td></td><td>Database host:
Indicates whether the database is the master or slave of a high availability cluster configuration.</td><td></td><td>The values that this measure reports and the numeric values that correspond to them are discussed in the table below:<table><tr><th>Measure Values</th><th>Numeric Value</th></tr><tr><td>Master</td><td>1</td></tr><tr><td>Slave</td><td>2</td></tr></table>Note:
Typically, this measure will report the Measure Values indicated in the table above. However, in the graph of this measure, the status of the database will be represented using the numeric equivalents only - i.e., 1 and 2.
If the database is not part of a high availability cluster, then this measure will not be reported by the test.</td></tr>
</table>

1.4.2 VDI Desktop Provider Test

Desktop providers encapsulate the details of the underlying virtualization platform. Typically, the Oracle VDI broker manages desktops provided by VMware vSphere/ESX servers, Microsoft Hyper-V, and Oracle VM VirtualBox. By closely monitoring the desktop providers in your Oracle VDI environment, you can promptly isolate the following:

- Unresponsive providers
- Providers running resource-intensive desktops
- Providers running free desktops
- Providers without any free desktops

Purpose	By closely monitoring the desktop providers in your Oracle VDI environment, you can promptly isolate the following: ➢ Unresponsive providers ➢ Providers running resource-intensive desktops ➢ Providers running free desktops ➢ Providers without any free desktops
Target of the test	An Oracle VDI Broker
Agent deploying the test	An internal/remote agent

<table>
<tr><td>Configurable parameters for the test</td><td colspan="3">1. TEST PERIOD - How often should the test be executed
2. HOST - The host for which the test is to be configured
3. PORT – Refers to the port used by the specified HOST.
4. SUDOPATH - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a sudo package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the sudo package in the SUDOPATH text box.
5. DETAILED DIAGNOSIS - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option.
The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled:
➢ The eG manager license should allow the detailed diagnosis capability
➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.</td></tr>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for each desktop provider managed by the Oracle VDI broker being monitored</td></tr>
<tr><td>Measurements made by the test</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
</table>

<table>
<tr>
<td></td>
<td>Status:
Indicates the current status of this desktop provider.</td>
<td></td>
<td>This measure reports one of the following values:
➢ OK
➢ Unresponsive
➢ Error

The table below lists the numeric values that correspond to the states mentioned above:

<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>OK</td><td>1</td></tr><tr><td>Unresponsive</td><td>0</td></tr><tr><td>Error</td><td>3</td></tr></table>
Note:
Typically, this measure will report the States indicated in the table above. However, in the graph of this measure, the status of the provider will be represented using the numeric equivalents only - i.e., 1, 0, and 3.
Using the detailed diagnosis of this measure, you can determine the provider type.</td>
</tr>
<tr>
<td></td>
<td>Pools:
Indicates the number of pools currently assigned to this desktop provider.</td>
<td>Number</td>
<td>To know the names of the pools, use the detailed diagnosis of this measure.</td>
</tr>
<tr>
<td></td>
<td>Datacenters:
Indicates the number of datacenters currently managed by this provider.</td>
<td>Number</td>
<td>This measure will appear only if the desktop provider is 'VMware' - i.e., only for VMware vSphere/ESX hosts.
To know the names of the datacenters, use the detailed diagnosis of this measure.</td>
</tr>
<tr>
<td></td>
<td>Total desktops:
Indicates the total number of desktops of this desktop provider that are currently managed by the broker.</td>
<td>Number</td>
<td>The detailed diagnosis of this measure will reveal the name of each desktop managed by this provider, the current state of the desktop, the user assigned to the desktop, and the pool to which the desktop belongs.</td>
</tr>
</table>

	Desktops with users assigned: Indicates the number of desktops of this provider that are currently assigned to users.	Number	
	Desktops with users not assigned: Indicates the number of desktops of this provider that are not currently assigned to users.	Number	
	Desktops with users assigned utilization: Indicates the percentage of desktops of this provider that have been assigned to users.	Number	Comparing the value of this measure across providers will enable you to identify which desktop provider still has free desktops - i.e., desktops that are yet to be assigned to users.
	CPU utilization: Indicates the percentage of the physical CPU resources of this provider that have been utilized by its desktops.	Percent	Compare the value of this measure across providers to know which provider runs CPU-intensive desktops. Potential CPU bottlenecks on a provider can thus be proactively isolated.
	CPU usage: Indicates the physical CPU usage of the desktops run on this provider in GHz.	GHz	A high value or a steady increase in this value for a provider is indicative of abnormal CPU usage by the desktops on that provider.
	Total memory: Indicates the total physical memory of this desktop provider.	MB	
	Memory utilization: Indicates the percentage of physical memory of this provider utilized by the desktops.	Percent	Compare the value of this measure across providers to determine whether the physical memory resources of any provider is being unduly drained by its desktops.

	Memory usage: Indicates the current absolute value of memory usage of the desktops on this provider.	MB	A high value or a steady increase in this value for a provider is indicative of abnormal memory usage by the desktops on that provider.
	Number of storage: Indicates the number of storages currently assigned to this desktop provider.	Number	
	Total capacity: Indicates the total storage capacity of this provider.	MB	
	Storage utilization: Indicates the percentage of storage capacity used by this provider.	Percent	Compare the value of this measure across providers to know which provider is consuming the maximum storage space.
	Storage usage: Indicates the amount of storage space utilized by this provider.	MB	Compare the value of this measure across providers to know which provider is consuming the maximum storage space.

1.4.3 VDI Storage Details Test

The storage server is used to store the virtual disks of the desktops. If the storage server is disabled or is experiencing a space crunch, the desktops using that server may be rendered unusable until such time the problem is resolved. Users attempting to access the desktops during the problem period would also be denied access owing to this. To make sure that the users' desktop experience does not suffer, you will have to periodically check the availability and usage of the storage servers used by desktops and promptly detect issues.

This test auto-discovers the storage servers of VMware vCenter, Microsoft Hyper-V, and Oracle VDI VirtualBox, runs periodic status and space checks on each server, and proactively alerts administrators to potential abnormalities in the space usage of the servers. The test also reports the number of desktops that are using a particular storage server so that, administrators can also analyze the impact of issues with that server.

This test is disabled by default. To enable the test, follow the Agents -> Tests -> Enable/Disable menu sequence, pick *Oracle VDI Broker* as the **Component type**, and pick **Performance** as the **Test type**. From the **DISABLED TESTS** list, select this test and click the **Enable** button. Finally, click the **Update** button to confirm the enabling.

Purpose	Auto-discovers the storage servers of VMware vCenter, Microsoft Hyper-V, and Oracle VDI VirtualBox, runs periodic status and space checks on each server, and proactively alerts administrators to potential abnormalities in the space usage of the servers		
Target of the test	An Oracle VDI Broker		
Agent deploying the test	An internal/remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box.		
Outputs of the test	One set of results for each storage server used by the desktops on VMware vCenter, Hyper-V, and Oracle VDI VirtualBox		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Status: Indicates the current status of this server.		If the storage server is enabled, this measure reports the value *Enabled*. For a server that is disabled, this measure reports the value *Disabled*. The table below lists the numeric values that correspond to the states mentioned above: **State** / **Numeric Value** Enabled / 1 Disabled / 0 **Note:** Typically, this measure will report the **State**s indicated in the table above. However, in the graph of this measure, the status of the storage server will be represented using the numeric equivalents only - i.e., *1* and *0*.

	Total capacity: Indicates the total storage capacity of this storage server.	MB	
	Usage: Indicates the storage space in this server that is currently being utilized by the assigned desktops.	MB	Ideally, this value should be low.
	Free capacity: Indicates the storage capacity in this server that is currently unused.	MB	Ideally, this value should be high.
	Utilization: Indicates the percentage of the total capacity of this server that is being utilized.	Percent	A low value is desired. A high value or a gradual increase in the value indicates a potential space contention on the server.
	Number of desktops: Indicates the number of desktops that are currently using this storage server.	Number	The value of this measure will help you understand how many desktops will be affected by a problem with a storage server.

1.5 The Desktop Pools Layer

A pool is a collection (or container) of desktops. Typically, you will create different pools for different types of users.

The test mapped to this layer enables you to ascertain the type of pools that have been configured on the broker, the current status of each pool, and the number and nature of desktops added to the pool.

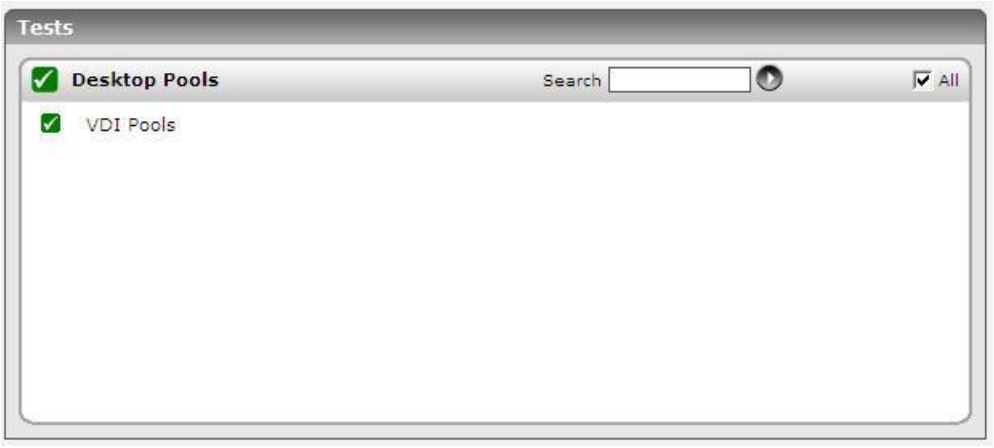

Figure 1.5: The tests mapped to the Desktop Pools layer

1.5.1 VDI Pools Test

A pool is a collection (or container) of desktops. Typically, you will create different pools for different types of users. Pool monitoring enables you to ascertain the type of pools that have been configured on the broker, the current status of each pool, and the number and nature of desktops added to the pool. With the help of the VDI Pools test, you can achieve all of the above.

Purpose	Helps ascertain the type of pools that have been configured on the broker, the current status of each pool, and the number and nature of desktops added to the pool
Target of the test	An Oracle VDI Broker
Agent deploying the test	An internal/remote agent

<table>
<tr><td>Configurable parameters for the test</td><td colspan="3">1. TEST PERIOD - How often should the test be executed
2. HOST - The host for which the test is to be configured
3. PORT – Refers to the port used by the specified HOST.
4. SUDOPATH - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a sudo package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the sudo package in the SUDOPATH text box.
5. DETAILED DIAGNOSIS - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the On option. To disable the capability, click on the Off option.
The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled:
➢ The eG manager license should allow the detailed diagnosis capability
➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.</td></tr>
<tr><td>Outputs of the test</td><td colspan="3">One set of results for each desktop pool configured on the Oracle VDI broker being monitored</td></tr>
<tr><td>Measurements made by the test</td><td>Measurement</td><td>Measurement Unit</td><td>Interpretation</td></tr>
<tr><td></td><td>Assignment status:
Indicates whether this pool is enabled/disabled for desktop assignment currently.</td><td></td><td>This measure reports the value Enabled if desktops can be assigned to the pool, and the value Disabled if desktops cannot be assigned to the pool.
The table below lists the numeric values that correspond to the states mentioned above:
<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Enabled</td><td>1</td></tr><tr><td>Disabled</td><td>2</td></tr></table>
Note:
Typically, this measure will report the States indicated in the table above. However, in the graph of this measure, the status of the pool will be represented using the numeric equivalents only - i.e., 1 and 2.</td></tr>
</table>

<table>
<tr>
<td></td>
<td>Type of desktop assignment:

Indicates the type of desktops assigned to this pool.</td>
<td></td>
<td>This measure can report either of the following values:

➢ Flexible

➢ Personal

Flexible desktops, which are flexibly assigned to users, are temporarily owned by these users. Once users log out of their desktops or their desktops are no longer in use, they will be recycled and become available for other users. As part of the recycle process, the desktop assignment will be removed.

Personal desktops are personally assigned to users, and are hence owned by these users (similar to the personal computers under their desks). Thus, they will never be recycled and will never become available for other users. (However, an administrator can explicitly remove the assignment and re-assign a desktop to a different user).

The table below lists the numeric values that correspond to the desktop assignment types explained above:

<table>
<tr><th>Assignment Type</th><th>Numeric Value</th></tr>
<tr><td>Personal</td><td>1</td></tr>
<tr><td>Flexible</td><td>2</td></tr>
</table>

Note:

Typically, this measure will report the Assignment Types indicated in the table above. However, in the graph of this measure, the desktop assignment type will be represented using the numeric equivalents only - i.e., 1 and 2.</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>Cloning status:

Indicates whether cloning is currently enabled or not for this desktop.</td>
<td></td>
<td>A straightforward method of deploying a new desktop without building it from scratch is to clone an existing desktop. Desktop clones are exact copies; the configuration and disks are duplicated.

This measure reports the value Enabled if cloning is enabled for the pool, and the value Disabled if cloning is not enabled for the pool.

The table below lists the numeric values that correspond to the states mentioned above:

<table>
<tr><th>State</th><th>Numeric Value</th></tr>
<tr><td>Enabled</td><td>1</td></tr>
<tr><td>Disabled</td><td>0</td></tr>
</table>

Note:

Typically, this measure will report the States indicated in the table above. However, in the graph of this measure, the cloning status will be represented using the numeric equivalents only - i.e., 1 and 0.</td>
</tr>
</table>

	Number of cloning jobs: Indicates the number of cloning jobs currently executing on the broker.	Number	**This measure will appear only for those pools for which the 'Cloning status' measure reports the value 'Enabled'.** Ideally, the value of this measure should be low. This is because, cloning and recycling of desktops can be resource intensive processes. For this reason, Oracle Virtual Desktop Infrastructure enables you to limit the number of clone and recycle jobs that can run in your VDI environment at any one time. ➢ **Setting Peak Times for Desktop Providers:** At the desktop provider level, the Oracle VDI Manager enables you to specify the maximum number of cloning and recycling jobs that will run at peak and off-peak times. You can also configure the times during each day that are considered peak times. Once set, Oracle VDI will control the combined total number of clone and recycle jobs that it runs according to the limits that are set. ➢ **Setting Cloning Production Priorities for Pools:** At the pool level, the Oracle VDI Manager enables you to specify the cloning production priority for particular pools. This priority is assigned to the pool when clone jobs are being submitted. A pool with a high production priority is allowed to clone more quickly than a pool with medium priority, and a pool with medium priority is allowed to clone more quickly than a pool with low priority. The production priority setting does not apply to recycle jobs.
	Guest pool: Indicates whether this pool has the 'Guest' flag turned on.		A Guest pool provides desktops for users who have no assignments to desktops or other non-Guest pools on the Oracle VDI Center they are currently connecting to.

	Total desktops: Indicates the total number of desktops in this pool.	Number	
	Running desktops: Indicates the number of desktops in this pool that are currently running.	Number	Use the detailed diagnosis of this measure to know the names of the running desktops and the user assigned to each.
	Poweredoff desktops: Indicates the number of desktops in this pool that are currently powered off.	Number	Compare the value of this measure across pools to know which pool has the maximum number of powered off desktops. Use the detailed diagnosis of this measure to know the names of the powered-off desktops and the user assigned to each.
	Suspended desktops: Indicates the number of desktops in this pool that are currently suspended.	Number	Compare the value of this measure across pools to know which pool has the maximum number of suspended desktops.
	Unknown desktops: Indicates the number of unknown desktops in this pool currently.	Number	If the broker is unable to detect the state of a desktop, such a desktop is said to be of an 'Unknown' state.
	Desktops with users not assigned: Indicates the number of desktops in this pool without any users assigned currently.	Number	Use the detailed diagnosis of this measure to know the names of the desktops that are not assigned to users.
	Used desktops: Indicates the number of desktops in this pool that are currently being used by users.	Number	
	Idle desktops: Indicates the number of desktops in this pool that are currently unused.	Number	A desktop is in the 'Idle' state whenever it is assigned and the user is not using it; for instance, when the desktop is assigned and the user has not logged in yet or when the desktop is assigned and the user just logged out. A desktop is recycled after it remains in the idle state for a configurable amount of time.

	Error desktops: Indicates the number of desktops in this pool with errors currently.	Number	Ideally, the value of this measure should be 0. Use the detailed diagnosis of this measure to know the names of the desktops with errors and the user assigned to each.
	Reserved desktops: Indicates the number of reserved desktops in this pool currently.	Number	A desktop is Reserved when it is being worked on by the Oracle VDI Core. This desktop state usually occurs when the desktop is the source of a manual copy operation or the desktop is recycled. The desktop will become available after leaving the Reserved state.

1.6 The Virtual Desktops Layer

Using the tests mapped to this layer, you can determine the following:

- The number and names of powered off desktops managed by the broker;
- The number and names of unknown desktops;
- The number and names of desktops that are in use currently, and those that are idle;
- The memory and disk space configuration of each desktop;
- The current virtual machine and desktop state of each desktop;

Figure 1.6: The tests mapped to the Virtual Desktops layer

1.6.1 VDI Desktop Details Test

This test reports the count and status of desktops managed by the Oracle VDI broker.

Purpose	Reports the count and status of desktops managed by the Oracle VDI broker

Target of the test	An Oracle VDI Broker		
Agent deploying the test	An internal/remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box. 5. **DETAILED DIAGNOSIS** - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enabled/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: ➢ The eG manager license should allow the detailed diagnosis capability ➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.		
Outputs of the test	One set of results for the Oracle VDI broker being monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Total desktops: Indicates the total number of desktops currently managed by the broker.	Number	
	Running desktops: Indicates the number of desktops that are currently running.	Number	Use the detailed diagnosis of this measure to know the names of the running desktops and the user assigned to each.
	Poweredoff desktops: Indicates the number of desktops that are powered off currently.	Number	Use the detailed diagnosis of this measure to know the names of the powered-off desktops and the user assigned to each.

	Suspended desktops: Indicates the number of desktops that are currently suspended.	Number	
	Unknown desktops Indicates the number of desktops that are currently unknown.	Number	If the broker is unable to detect the state of a desktop, such a desktop is said to be of an 'Unknown' state.
	Desktops with users not assigned: Indicates the number of desktops that have not been assigned to any users currently.	Number	Use the detailed diagnosis of this measure to know the names of the desktops that are not assigned to any user.
	Used desktops: Indicates the number of desktops that are currently being used by users.	Number	
	Idle desktops: Indicates the number of desktops that are currently unused.	Number	A desktop is in the 'Idle' state whenever it is assigned and the user is not using it; for instance, when the desktop is assigned and the user has not logged in yet or when the desktop is assigned and the user just logged out. A desktop is recycled after it remains in the idle state for a configurable amount of time.
	Error desktops: Indicates the number of desktops with errors currently.	Number	Ideally, the value of this measure should be 0. Use the detailed diagnosis of this measure to know the names of the desktops with errors and the user assigned to each.
	Reserved desktops: Indicates the current number of reserved desktops.	Number	A desktop is Reserved when it is being worked on by the Oracle VDI Core. This desktop state usually occurs when the desktop is the source of a manual copy operation or the desktop is recycled. The desktop will become available after leaving the Reserved state.

1.6.2 VDI Desktop Information Test

Virtual machines are used to run the operating systems which render the desktops. They are controlled by a hypervisor, such as Oracle VDI Hypervisor, Microsoft Hyper-V, and VMware Infrastructure. They cycle through traditional machine states such as powered off and running. This test auto-discovers the desktops configured on all desktop providers managed by the broker and reports the current 'machine state' of each desktop. This way, you can quickly isolate powered-off desktops and unknown desktops. In addition, the test captures the 'desktop state' for each desktop. Desktop states are used to accomplish the following:

- Implement the desktop lifecycle
- Synchronize Oracle VDI Core hosts and virtualization platform
- Serve as a tool for monitoring and analyzing the system state

Knowledge of desktop states enables you to determine which desktops are available, which ones are idle, and which are being used currently. Besides the above, the test also reveals the amount of memory and disk space that each desktop has been configured with.

Purpose	Auto-discovers the desktops configured on all desktop providers managed by the broker and reports the current 'machine state', 'desktop state', and the memory and disk space configuration of each desktop
Target of the test	An Oracle VDI Broker
Agent deploying the test	An internal/remote agent
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** - The host for which the test is to be configured 3. **PORT –** Refers to the port used by the specified **HOST**. 4. **SUDOPATH** - This test executes certain privileged VDA (Virtual Desktop Access) commands to pull out the desired metrics from the broker. To enable the test to run these commands, you first need to install a **sudo** package on the broker host. The procedure for installing this package is detailed in Section 1.1 of this document. Once the package is installed, you need to specify the full path to the install directory of the **sudo** package in the **SUDOPATH** text box.

	5. **DETAILED DIAGNOSIS** - To make diagnosis more efficient and accurate, the eG Enterprise suite embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: ➢ The eG manager license should allow the detailed diagnosis capability ➢ Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.		
Outputs of the test	One set of results for each desktop managed by the Oracle VDI broker being monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**

<table>
<tr>
<td></td>
<td>Machine state:
Indicates the current 'machine state' of this desktop.</td>
<td></td>
<td>This measure reports one of the states listed below:
➢ Powered off
➢ Running
➢ Suspended
➢ Unknown
The table below discusses the numeric values that correspond to each of the states mentioned above:
<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Powered off</td><td>0</td></tr><tr><td>Running</td><td>1</td></tr><tr><td>Suspended</td><td>2</td></tr><tr><td>Unknown</td><td>3</td></tr></table>Note:
Typically, this measure will report the States indicated in the table above. However, in the graph of this measure, the machine state will be represented using the numeric equivalents only - i.e., 0 to 3.
Use the detailed diagnosis of this measure for complete details of the desktop such as the user assigned to the desktop, the assignment type, the operating system and IP address of the desktop, the storage server name, the ZFS volume used by the desktop..</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>Desktop state:
Indicates the current 'desktop state' of this desktop.</td>
<td>Number</td>
<td>This measure reports one of the states listed below:
➢ Used
➢ Available
➢ Idle
➢ Unresponsive
➢ Reserved
The table below discusses the numeric values that correspond to each of the states mentioned above:
<table><tr><th>State</th><th>Numeric Value</th></tr><tr><td>Used</td><td>1</td></tr><tr><td>Available</td><td>2</td></tr><tr><td>Idle</td><td>3</td></tr><tr><td>Unresponsive</td><td>4</td></tr><tr><td>Reserved</td><td>5</td></tr></table>Note:
Typically, this measure will report the States indicated in the table above. However, in the graph of this measure, the machine state will be represented using the numeric equivalents only - i.e., 1 to 5.</td>
</tr>
<tr>
<td></td>
<td>Ram allocated:
Indicates the total amount of memory allocated to this desktop.</td>
<td>MB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disk capacity:
Indicates the total amount of disk space allocated to this desktop.</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total video memory:
Indicates the total amount of video memory allocated to this desktop.</td>
<td>Number</td>
<td>Video memory is a term generally used in computers to describe some form of writable memory, usually RAM, dedicated to the purpose of holding the information necessary for a graphics card to drive a display device.</td>
</tr>
</table>

Chapter 2

Conclusion

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

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