Monitoring Leostream Connection Broker

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

The Leostream Connection Broker is a robust and flexible session management tool that performs policy-based assignment of users to computing resources. Using this Connection Broker, you can provide end users with access to data and desktops from a wide range of clients.

In the Connection Broker, you first define:

- **Desktops**: Virtual machines, physical machines, and Microsoft® Terminal Services that you want to make available for assignment to end users.
- **Applications**: Applications hosted in a Citrix XenApp farm, that you want to assign to end users.
- **Centers**: A group of desktops or applications registered with the Connection Broker from external systems.
- **Pools**: Collections of desktops or applications, gathered from a single or multiple centers.
- **Policies**: Rules that assign desktops and applications to users and define what happens when the assignment is done.
- **Roles**: Permissions that control the level of access an end users has to different features in the Connection Broker interface.

Then, you create rules that map end users to roles and policies, which in turn determine which Desktops the user is assigned and what level of access the user has to the Connection Broker interface. The Connection Broker maps users to rules via their authentication server attributes, allowing you to authenticate users against existing Active Directory, Novell® eDirectory™, or OpenLDAP™ directory services.

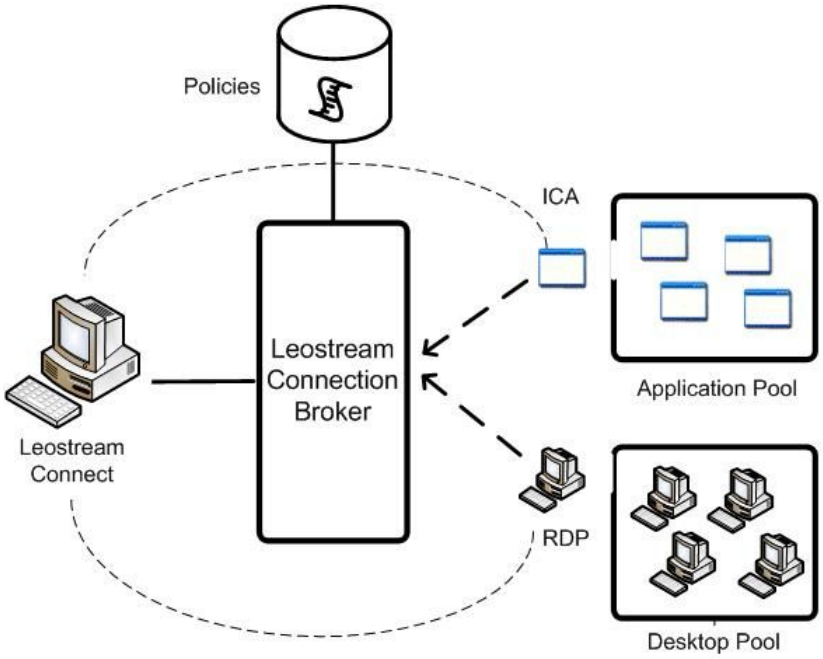

Figure 1.1: Assignment of desktops and applications from a pool to a user via assignment rules

The users of today are intolerant towards access delays, regardless of how rarely it occurs, or where they are accessing the data/desktops from - whether from a thin client, fat client, Web browser, or from within or outside a firewall. The result? Even the slightest of deviations in the performance of the Leostream Connection Broker would result in considerable loss of reputation and revenue. For instance, say, the Connection Broker is used in a virtualized environment to provide users with access to virtual machines. In such an environment, if the Connection Broker is unavailable, or is available, but processes jobs very slowly, the user experience with the virtualized infrastructure as a whole will suffer. To avoid such adversities, continuous monitoring of the Leostream Connection Broker is imperative. eG Enterprise helps administrators in this regard!

Chapter 2: How to Monitor Leostream Connection Broker Using the eG Enterprise?

eG Enterprise monitors Leostream in 2 ways - by deploying the eG agent on the connection broker itself, or by deploying the eG agent on any remote Windows host in the environment and configuring it to remotely monitor Leostream. While the former is termed "agent-based" monitoring, the latter is called "agentless" monitoring as it does not require an eG agent to be present on the target connection broker

In either case, the eG agent uses the Connection Broker's web query interface to connect to it and collect metrics. HTTP or HTTPS can be used for communication between the eG agent and the Connection Broker, and the administrator's credentials (i.e., user name and password) must be specified when configuring the Connection Broker for monitoring, so that the eG agent can connect to the Connection Broker and obtain metrics. To make the eG agent to communicate with the Connection Broker, the eG agent should be configured with the credentials of a user to the Connection Broker who has **Administrator** privileges. The procedure to create such a user has been discussed in Section **2.1**.

Once the pre-requisites are fulfilled, proceed to monitor the connection broker using eG Enterprise. Then proceed to manage the connection broker for monitoring. The steps for achieving this has been explained in the Section **2.2**.

2.1 Pre-requisites for Monitoring the Leostream Connection Broker

The eG agent logs into the Leostream Connection Broker to extract metrics of interest from it. To facilitate this login, most of the tests executed by the eG agent need to be configured with the credentials of a user to the Connection Broker who has **Administrator** privileges. You can either provide the login details of an existing **Administrator** or create a new user for this purpose. The steps below discuss how to create a new user on the Leostream Connection Broker, and assign **Administrator** privileges to that user.

1. Connect to the Connection Broker using the URL: *http://<ConnectionBrokerIP>/ or https://<ConnectionBrokerIP>/*
2. When the login screen appears, login as an **Administrator**. The default administrator is admin with password **leo**.

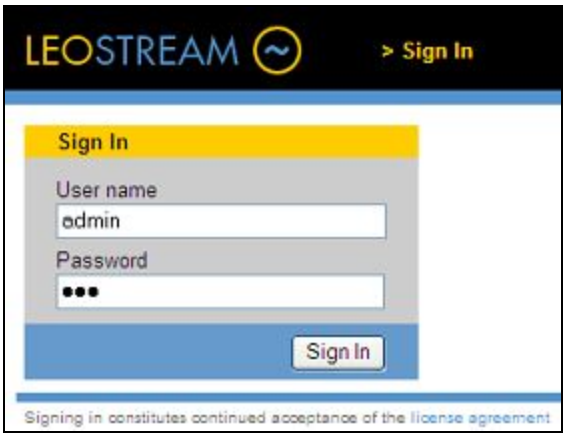

Figure 2.1: The login page

3. When the Leostream admin console appears, click on the **Users** link at the top of the console to view the list of users registered with the Connection Broker.

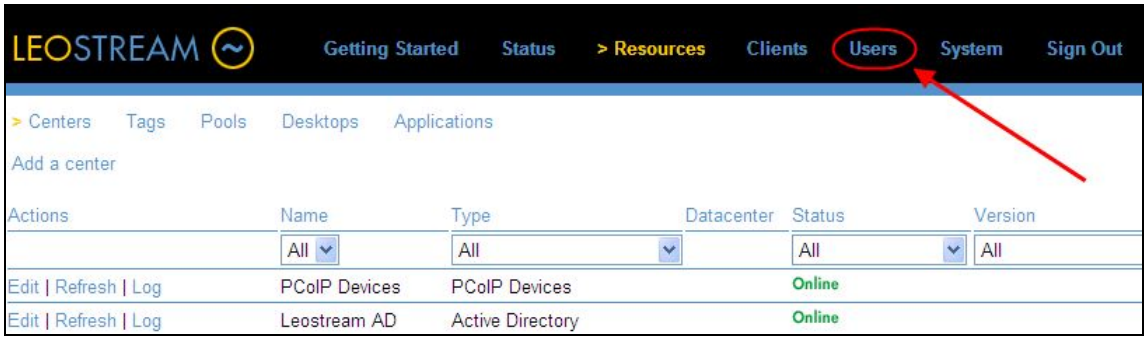

Figure 2.2: Clicking on the Users link

4. When Figure 6 appears, click on **Create** to create a new user.

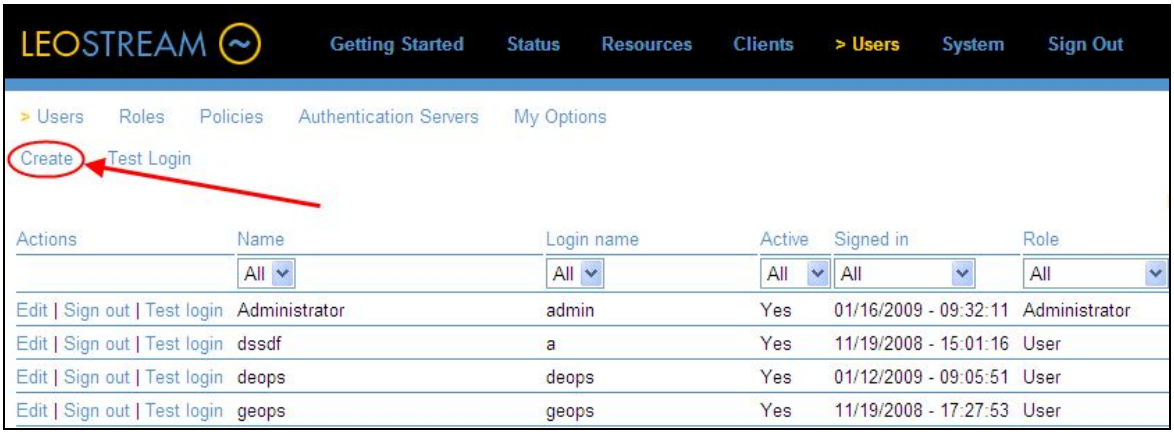

Figure 2.3: Clicking on the Create button

5. In the **Create a user** page that then appears (see Figure 7), enter the **Name** of the user.

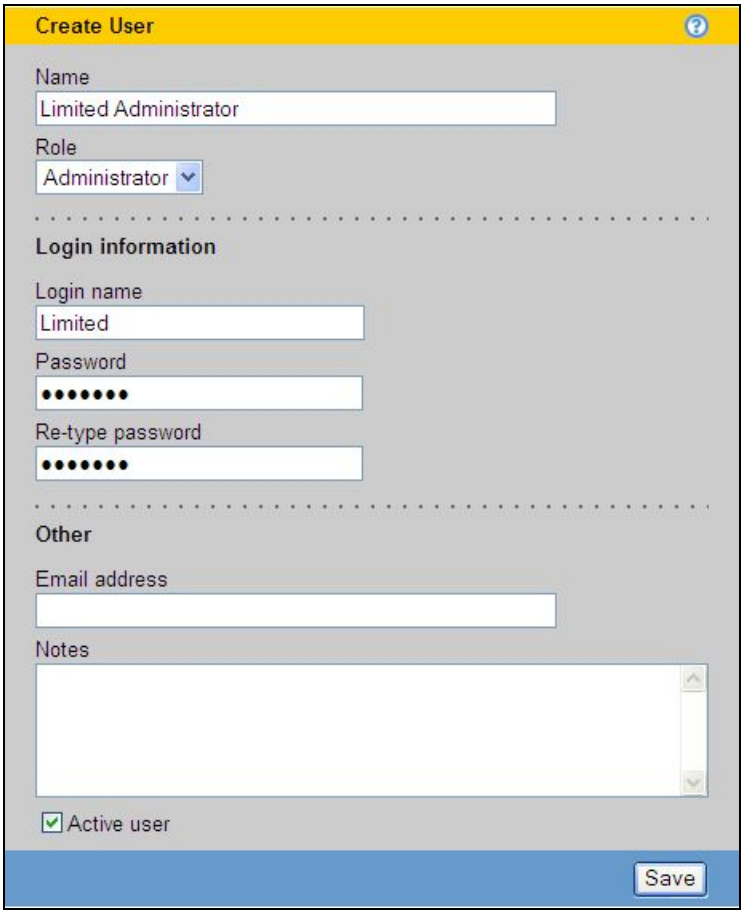

Figure 2.4: Creating a new Administrator user

6. Select the appropriate **Role** for the user from the drop-down menu. To enable the eG agent to execute tests on the Connection Broker, you need a user with **Administrator** privileges. So, select **Administrator** from the **Role** list (see Figure 7).
7. Enter a **Login name** for the user, using the same format as used for logging into Microsoft Windows® operating systems. Login names are not case sensitive. While configuring a test for the Connection Broker, the user and password parameters should be configured with the **Login name** and **Password** specifications in Figure 7.
8. Enter an initial **Password** for the user. Users can subsequently change own password. Passwords are not case sensitive.
9. Enter an optional **Email address** for the user if you want them to receive messages from the Connection Broker. Users can subsequently change their email address settings.
10. Enter any **Notes** to save with the user definition.

11. Click **Save**.

2.2 Managing the Leostream Connection Broker

The eG Enterprise cannot automatically discover the Leostream Connection Broker. This implies that you need to manually add the component for monitoring. Remember that the eG Enterprise automatically manages the components that are added manually. To add a Leostream Connection Broker, do the following:

1. Log into the eG administrative interface.
2. Follow the Components -> Add/Modify menu sequence in the **Infrastructure** tile of the **Admin** menu.
3. In the **COMPONENT** page that appears next, select *Leostream CB* as the **Component type**. Then, click the **Add New Component** button. This will invoke Figure 2.5.

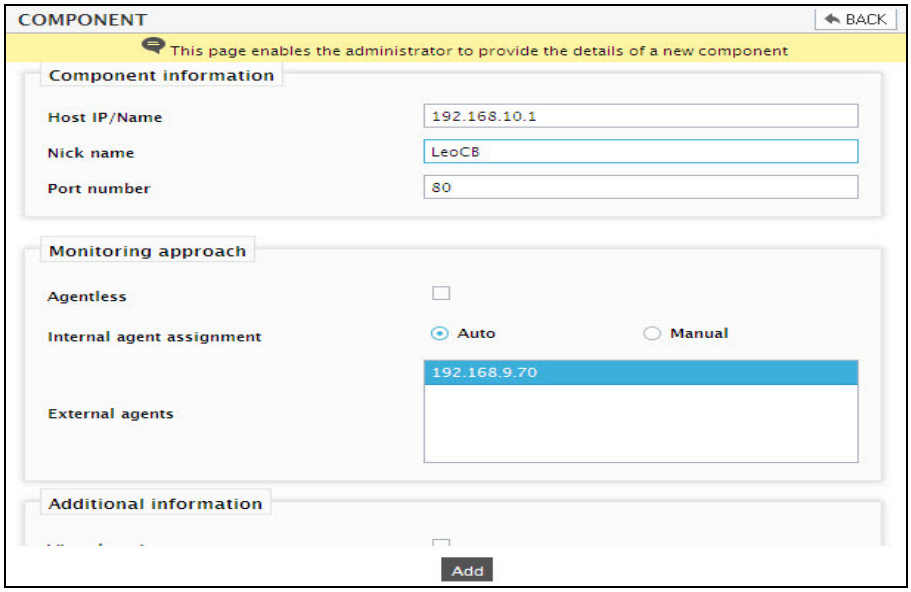

Figure 2.5: Adding Leostream Connection Broker

3. Specify the **Host IP** and the **Nick name** of the Leostream CB in 2.2.
4. The **Port number** will be set as 80 by default. If the Leostream CB is listening on a different port in your environment, then override this default setting.
5. Then, click on the **Add** button to add the Leostream CB for monitoring.

2.3 Configuring the tests

1. When you attempt to sign out, a list of unconfigured tests appears (see Figure 2.6).

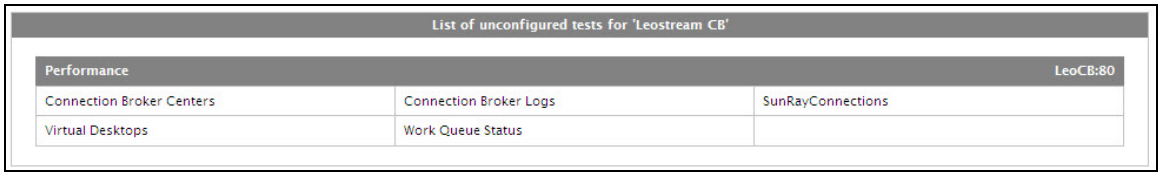

Figure 2.6: List of Unconfigured tests for the Leostream Connection Broker

2. Click on the test names to configure. To know how to configure the tests, refer to **Monitoring the Leostream Connection Broker** chapter.
3. Finally, signout of the eG administrative interface.

Chapter 3: Monitoring the Leostream Connection Broker

eG Enterprise prescribes a specialized Leostream CB monitoring model that provides 24 x 7 monitoring of the Connection Broker.

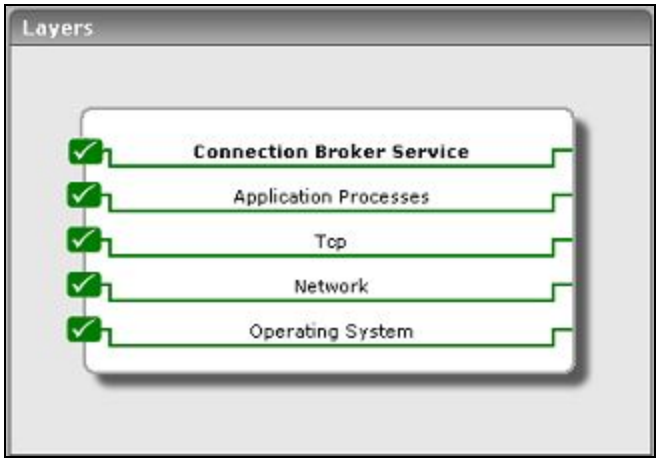

Figure 3.1: Layer model of the Virtual Desktop Manager

Each layer of Figure 2 is mapped to a series of tests that report a wide variety of performance metrics. The **Operating System** layer monitors the CPU, memory, and disk resources used on the operating system that the Connection Broker is running on. The **Network** layer monitors connectivity and traffic to and from the Connection Broker system. TCP traffic activity is tracked by the TCP layer, and the status of the key Connection Broker processes (e.g., the web server, the application server, etc.) is tracked by the **Application Processes** layer. The metrics associated with each of these layers are dealt with extensively in the *Monitoring Unix and Windows Servers* document.

The **Connection Broker Service** layer collects metrics specific to the Leostream Connection Broker. Using these metrics, administrators can find quick and easy answers to the following performance queries:

- Is the Connection Broker available? How quickly is it responding to requests?
- Is the web server component of the Connection Broker available?
- Are the internal and external databases of the Connection Broker available?
- Are the databases responding quickly to queries?
- Were any errors reported in the Connection Broker logs?

- What is the current status of each center from which the Connection Broker gathers desktops, physical machines, etc.?
- How many jobs are in the work queue? Are there too many pending jobs?
- Did any job abort suddenly?
- Are the Sun Ray servers connected to the Connection Broker active?
- How many VMs are registered with the Connection Broker? How many of these VMs are simultaneously active and how many VMs are available to handle new requests from users?

The metrics associated with the **Connection Broker Service** layer are discussed in detail below.

3.1 The Connection Broker Service Layer

The tests mapped to this layer monitor the overall health of the key components of the Connection Broker such as the database, the centers, the work queues, the log files, etc., and also report whether the Connection Broker is available or not.

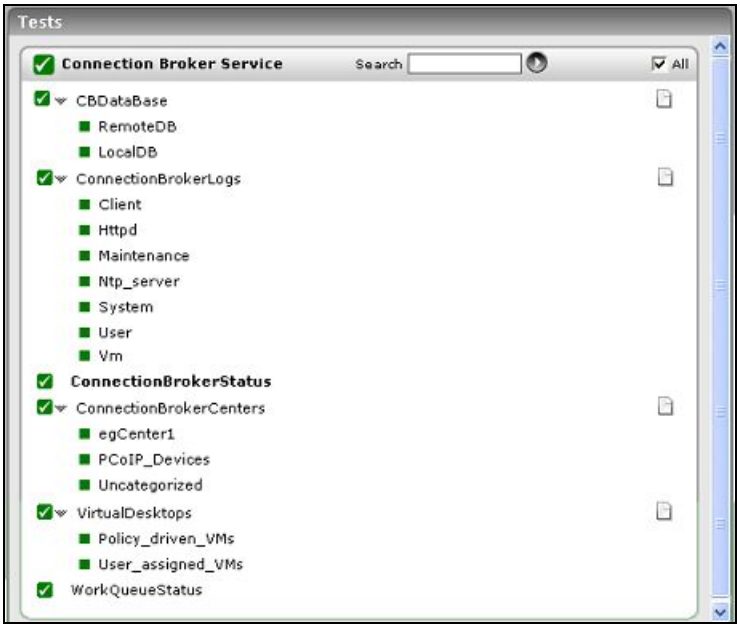

Figure 3.2: The tests mapped to the Connection Broker Service layer

3.1.1 Connection Broker Status Test

The 24x7 availability of the Connection Broker is imperative to ensure that end-users have uninterrupted access to desktops/data and critical computing resources. A Connection Broker might be rendered unavailable owing to many reasons – eg., an internal configuration error, a database

error, the non-availability of the Connection Broker's web interface, etc. While the knowledge of the failure of a Connection Broker is valuable to an administrator, knowing what caused the failure can alone help the administrator quickly resolve the issue and restore the Connection Broker to normalcy.

This test instantly informs administrators of the non-availability (if any) of the Connection Broker, reports whether it is owing to the web service being down, and also intimates them of any probable slowdown in the responsiveness of the server.

Target of the test : A Leostream Connection Broker

Agent deploying the test : An external agent

Outputs of the test : One set of results for the Connection Broker being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Connection broker service availability	Indicates whether/not the Connection Broker service is available.	Percent	The value 100 indicates that the Connection Broker is available. If the value is 0, it indicates that the connection broker is not available. This could be owing to an internal error, or if the database is inaccessible, or a poor network connection.

Measurement	Description	Measurement Unit	Interpretation
Web service availability	Indicates whether the web server part of the Connection Broker is available or not.	Percent	The value 100 indicates that the web server is available. If the value is 0, it indicates that the web server is not available. In the event of the non-availability of the Connection Broker, you can use the value of this measure to determine whether the Connection Broker failure occurred because the web server was deliberately/inadvertently stopped or had failed due to some errors.
Response time	Indicates the time taken by the Connection Broker to respond to requests.	Secs	Ideally, this value should be low. Sporadic spikes or a steady increase in this value is a cause for concern as it indicates deterioration in the performance of the Connection Broker. This could be owing to improper configuration of the broker or when the broker experiences an overload.

3.1.2 Connection Broker Database Test

The Connection Broker is completely self-contained and is bundled with an internal database. This database stores and maintains the following:

- Passwords only for users that are created locally
- Clients
- Desktops and their environments
- Microsoft Active Directory® user credentials: Encrypted.
- Machine centers: Access credentials are encrypted.
- Locations, roles, and all other operational parameters

An external database, on the other hand, is required when Connection Brokers are clustered. To handle high peak loads (such as, simultaneous logons) and failure of a Connection Broker (or its host) it is necessary to cluster Connection Brokers and run each Connection Broker on a different virtualization host. As soon as you cluster Connection Brokers virtual machines, they need an

external database in order to share information. Microsoft SQL Server® can be used as an external database server for the Connection Broker.

A key component of the Connection Broker is its internal and external database servers. If the internal/external database is rendered unavailable or is experiencing a significant slowdown, it can cause prolonged Connection Broker outages, deny/delay users access to critical desktops/data, and thus mar the user experience. Using this test, administrators can periodically monitor the availability and responsiveness of the local and remote databases, be proactively alerted to anomalies, and avert adversities in time.

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results each for the local and remote database used by the Connection Broker.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Availability	Indicates whether the database is available or not.	Percent	While the value 100 indicates that the database is available, the value 0 indicates that it is not. The internal database will be available as long as the Connection Broker is. If

Measurement	Description	Measurement Unit	Interpretation
			the external database is unavailable, it could be owing to an improper configuration of the database or a poor network connection (in case of an external database).
Response time	Indicates the time taken by the connection broker to respond to requests.	Secs	Ideally, the value of this measure should be low. A very high value indicates a marked deterioration in the performance of the database, which can be attributed to insufficient space, improper configuration, or a network congestion (in case of an external database).

3.1.3 Connection Broker Logs Test

The Connection Broker maintains a record of all activities it performs in log files. The logs show the different stages of user connection - e.g., when a user signs in, is offered and assigned a Desktop, logs out, etc. Using the logs, administrators can:

- Diagnose problems with your policy logic related to power and assignment controls, by looking at logs related to powering up and down Desktops, and releasing desktops back to the pool.
- Monitor the system load, such as the number of logins over a period of time.
- Monitor user access

This test monitors the logs and alerts administrators to error/warning events that are captured by the logs.

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each of the Connection Broker logs being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
User	To enable the test to log into the Connection Broker and extract statistics of interest from it, specify the login name of a user on the Connection Broker who is assigned the **Administrator** role. If need be, you can even create a special **Administrator** user on the Connection Broker for this purpose, and pass the credentials of that user to the test. Refer to Section **2.1** to know how to create such a user.
Password	Specify the password of the user here.
Confirm Password	Confirm the password by retyping it here.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.
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.
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.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Information events	Indicates the number of information events that were logged in the log currently.	Number	The detailed diagnosis of this measure reveals the details of the information events.
Warnings	Indicates the number of warning events recorded in the log, currently.	Number	Ideally, this value should be 0. If a non-zero value is reported, use the detailed diagnosis capability of this measure to know more about the warning event.
Errors	Indicates the number of error events that were currently recorded in the log.	Number	Ideally, this value should be 0. A non-zero value warrants further investigation. You can then use the detailed diagnosis capability of this measure to know more about the error event.

3.1.4 Connection Broker Centers Test

The Connection Broker adds Desktops through a process called *discovery*, i.e., gathering available resources from external systems. The Connection Broker can discover:

- Microsoft® Windows® Terminal Services Servers and Desktops using the Leostream Agent
- Virtual Desktops from the virtualization host or virtualization management system
- Physical machines registered in a Microsoft Active Directory® server
- Applications hosted by a Citrix XenApp server

The external systems from which Desktop are discovered are called centers.

This test auto-discovers all the centers on a Connection Broker, and reports the current status of each. Besides user-configured centers, the test also reports the status of an **Uncategorized center**; this center contains Desktops running the Leostream Agents, which are not cataloged by another center. The **Uncategorized** center allows you to:

- Add physical machines without creating an Active Directory center
- Add a virtual machine that is part of a non-natively supported hypervisor, such as Microsoft Hyper-Vi

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each of the Connection Broker centers being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
User	To enable the test to log into the Connection Broker and extract statistics of interest from it, specify the login name of a user on the Connection Broker who is assigned the **Administrator** role. If need be, you can even create a special **Administrator** user on the Connection Broker for this purpose, and pass the credentials of that user to the test. Refer to Section **2.1** to know how to create such a user.
Password	Specify the password of the user here.
Confirm Password	Confirm the password by retyping it here.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.
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.

Measurements made by the test

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td>Status of the CB Center</td><td>Indicates the current status of the center.</td><td>Boolean</td><td>The status indicators and what they represent are discussed below:
<table>
<tr><th>Numeric Value</th><th>Status</th><th>Description</th></tr>
<tr><td>1</td><td>Online</td><td>Indicates the center is operating normally</td></tr>
<tr><td>2</td><td>Offline</td><td>Indicates that the Connection Broker is unable to contact the center</td></tr>
<tr><td>3</td><td>Needs Upgrade</td><td>Indicates that the Leostream Agent in this center needs to be upgraded. This setting applies only for centers that use the Leostream Agent.</td></tr>
<tr><td>4</td><td>Disk Full</td><td>Indicates that the center's disk is full</td></tr>
<tr><td>5</td><td>Refreshing</td><td>Indicates that the Connection Broker is refreshing the contents of this center</td></tr>
</table>
Note:
This measure reports the States listed in the table above to indicate the status of the CB center. However, in the graph of this measure, the mode of the routing engine is indicated using only the Numeric Values listed in the above table.</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
Is CB center active?	Indicates whether the center is active or inactive currently.	Number	This is a user-configured value. If the measure reports the value 1, it indicates that a user created a center, then wanted to have the Broker ignore the contents of the center, without deleting the center from the Broker. The value 0 indicates that the center is inactive.

3.1.5 Work Queue Status Test

The job queue contains Connection Broker processes that are independent of the Web interface. When the Connection Broker is not functioning correctly, you can use the job queue as a diagnostics tool. For instance, if you requested an action and it has not taken place, check if the action is pending in the job queue.

This test monitors the job queues and reports the status of jobs queued on the Connection Broker.

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Connection Broker being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
User	To enable the test to log into the Connection Broker and extract statistics of interest from it, specify the login name of a user on the Connection Broker who is assigned the **Administrator** role. If need be, you can even create a special **Administrator** user on

Parameter	Description
	the Connection Broker for this purpose, and pass the credentials of that user to the test. Refer to Section **2.1** to know how to create such a user.
Password	Specify the password of the user here.
Confirm Password	Confirm the password by retyping it here.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.
ShowFinishedDD	This test also reports the number of jobs in the queue that were recently completed. The detailed diagnosis of this measure, if enabled, will provide the details of all the newly finished jobs. In some environments, the count of the newly finished jobs could run to a thousand. In such environments naturally, the detailed diagnosis data for this measure, if available, will consume a considerable amount of database space, and can sometimes even choke the database. To reduce the strain on the database, the eG agent, by default, does not collect detailed diagnosis information for the *New finished jobs* measure. Accordingly, the ShowFinishedDD flag is set to **No**, by default. If you want to view the detailed diagnosis for this measure, then set this flag to **Yes**.
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.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total jobs	Indicates the total number of jobs that are currently in queue.	Number	This is mostly a measure of the complexity of your Connection Broker configuration, in the sense of how many external systems you integrate with. For example, the more centers

Measurement	Description	Measurement Unit	Interpretation
			you have, the more refresh jobs will be in the queue.
Waiting jobs	Indicates the number of jobs that are currently waiting.	Number	Waiting jobs are those jobs that are pending execution. A high value of this measure need not necessarily indicate a bottleneck. You can have a number of pending jobs if the work queue has been suspended in order to process user logins, wherein this becomes a measure of how densely populated your Connection Broker is. Also, some jobs are pending because the Broker has actually scheduled them for a later time. Before a pending job should send up any flag, check that the Scheduled time is not before the Current time. Use the detailed diagnosis of this measure to know which jobs are pending, and their related details.
Inprogress jobs	Indicates the number of jobs that are currently executing.	Number	This measure reports the number of records from the work_queue table where the status is 'I'. If a lot of jobs are simultaneously in progress, one of the center scans may be taking a long time, for example, large VirtualCenter / Active Directory scans. Alternatively, this could be an indication that the Broker is unhealthy. Check the scheduled time against the start time for the job. If there are a large number of jobs that start after they are scheduled, your Broker is busy. The detailed diagnosis of this measure reveals the details of jobs that are currently in progress.
Finished jobs	Indicates the number of jobs that have completed	Number	This measure reports the number of records in the work_queue table with

Measurement	Description	Measurement Unit	Interpretation
	execution currently.		the status 'F'. Keep in mind that some jobs cannot start before others finish. For example, if a VM that is scheduled to power off then power on, the Power On job will be pending until the power off is complete.
Aborted jobs	Indicates the number of jobs that aborted currently.	Number	This measure refers to those jobs that stopped executing on their own – i.e., it returns the number of records in the work_queue table where the status is 'A'. Aborted jobs are generally not good. However, you will also get aborted jobs when you update or restart your Connection Broker. Be aware of when those events happen, so you can account for aborted jobs during those times. You can use the detailed diagnosis of this measure to view the list of aborted jobs and investigate the reasons behind the abnormal termination of the jobs.
Cancelled jobs	Indicates the number of jobs that were currently cancelled.	Number	An upcoming job that is terminated by the user is considered a cancelled job. To view the list of the jobs that were cancelled, use the detailed diagnosis of this measure.
Increase in qlength	Indicates the number of jobs that were newly added to the queue in this measurement period.	Number	While the total number of jobs in the work queue is useful, of more importance is whether the number of jobs in the work queue is increasing or decreasing. A consistent increase in length of the work queue may indicate that the Connection Broker is starting to bottleneck. Check the increase in pending and finished jobs. If the

Measurement	Description	Measurement Unit	Interpretation
			pending jobs in the work queue are increasing, this is a clear sign of a bottleneck on the Connection Broker.
New wait jobs	Indicates the number of new pending jobs in the queue in this measurement period.	Number	If there is a sudden/gradual increase in the value of this measure, it could indicate a processing bottleneck on the Connection Broker. Use the detailed diagnosis of this measure to know the new pending jobs and their related details.
New inprogress jobs	Indicates the number of new jobs in execution in this measurement period.	Number	The detailed diagnosis of this measure provides the details of the jobs that are in progress in this measurement period.
New finish jobs	Indicates the number of jobs that finished execution in this measurement period.	Number	The detailed diagnosis of this measure provides the details of the newly finished jobs. Note that the detailed diagnosis for this measure wil be available only if the showfinisheddd flag is set to Yes.
New abort jobs	Indicates the number of the jobs that were newly aborted in this measurement period.	Number	Ideally, the value of this measure should be low. A high value could indicate a problem condition. You can use the detailed diagnosis of this measure to view the list of newly aborted jobs and investigate the reasons behind the abnormal termination of the jobs.
New cancel jobs	Indicates the number of jobs that were newly cancelled.	Number	The detailed diagnosis of this measure provides the details of the newly cancelled jobs.

The detailed diagnosis of the *Waiting jobs* measure reveals the details of all jobs that are currently pending in the worker queue of the Connection Broker. The details displayed include:

- The name of the user who requested the job
- The ID of the job following which this job should run

- The ID and name of the object on which the job should be performed
- The name of the job/action
- The parameters to be passed to the action
- The time at which the job is to be executed
- The result of the job; whether successful or not
- Data and time at which the processing of the job was begun by the queue
- Data and time at which the processing of the job was completed by the queue
- The PID of the work queue that controls the job
- The site ID, if the test connects to a remote database
- The number of times the job has run

Using this information, administrators can accurately identify the pending jobs, and also determine the users who have initiated the jobs. This information helps administrators in investigating the reasons for the delay in job processing.

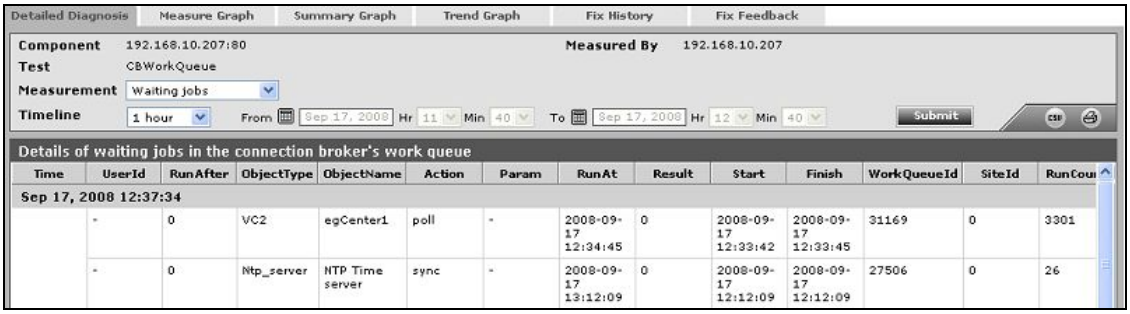

Figure 3.3: The detailed diagnosis of the Waiting jobs measure

The detailed diagnosis of the *Inprogress jobs* measure reveals the details of all jobs that are currently executing on the Connection Broker.

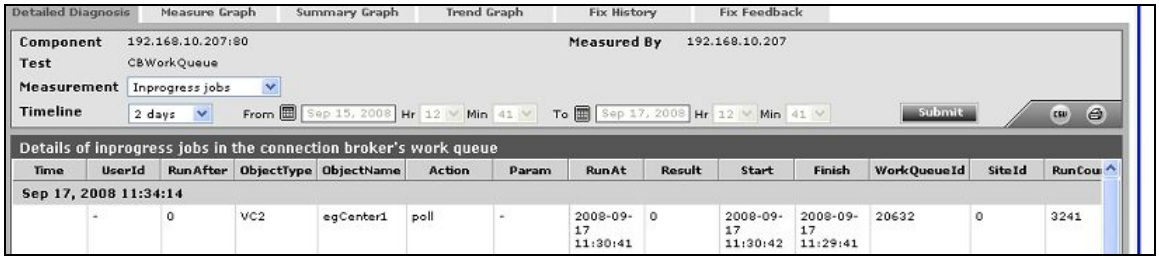

Figure 3.4: The detailed diagnosis of the Inprogress jobs measure

The detailed diagnosis of the *Aborted jobs* measure reveals the details of all jobs that have stopped executing currently, without being manually terminated by the user. By analyzing this information, administrators can zero-in on the reasons for the abnormal termination of a job, and ensure such process abortions do not recur.

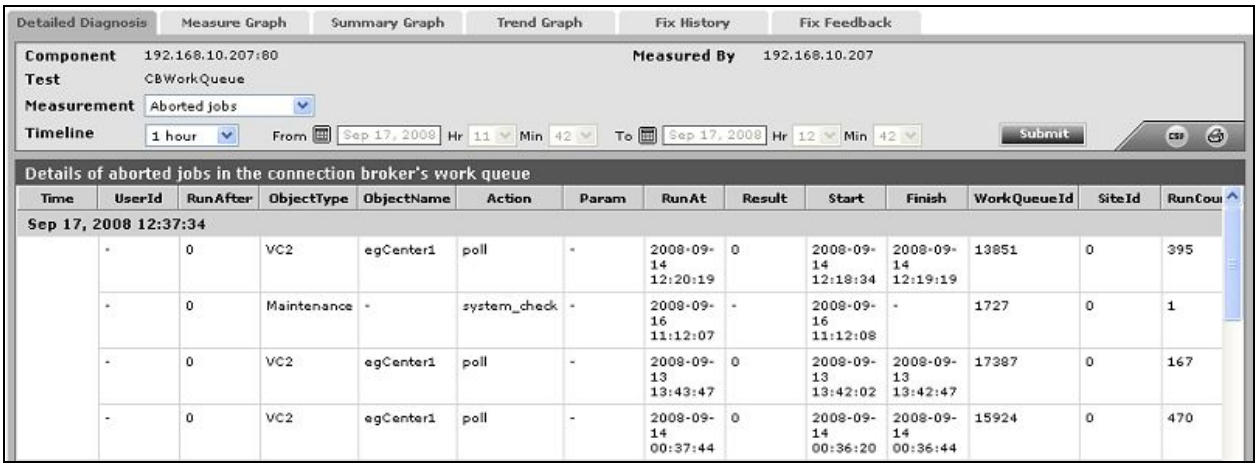

Figure 3.5: The detailed diagnosis of the Aborted jobs measure

The detailed diagnosis of the *New inprogress jobs* measure reveals the details of the recent additions to the list of jobs that are in progress.

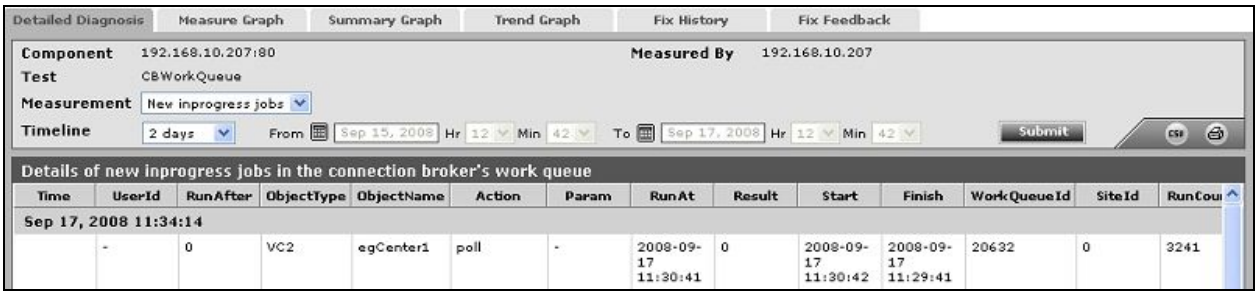

Figure 3.6: The detailed diagnosis of the New Inprogress jobs measure

3.1.6 SunRayConnections Test

Sun Ray is a stateless thin-client solution from Sun Microsystems, Inc., that is aimed at corporate environments.

The Sun Ray architecture consists of two components: the Sun Ray thin client DTU (desktop unit) and the Sun Ray Server Software. The Sun Ray DTU is typically a display device that requires no desktop administration yet provides the experience users expect from a high-end workstation. With

the Sun Ray smart card interface, a user simply inserts a smart card into any available Sun Ray thin client and instantaneously accesses an existing session.

The Sun Ray Server Software provides user authentication and encryption between server and client as well as user session management. It not only enhances security, but also helps reduce the complexity and administration of the IT environment.

The Leostream Connection Broker can be configured to interact with the Sun Ray server software, so that users connecting via the Sun Ray thin client DTU are provided with easy and instant access to remote VMs. Figure 12 depicts how the Leostream Connection Broker works with the Sun Ray server.

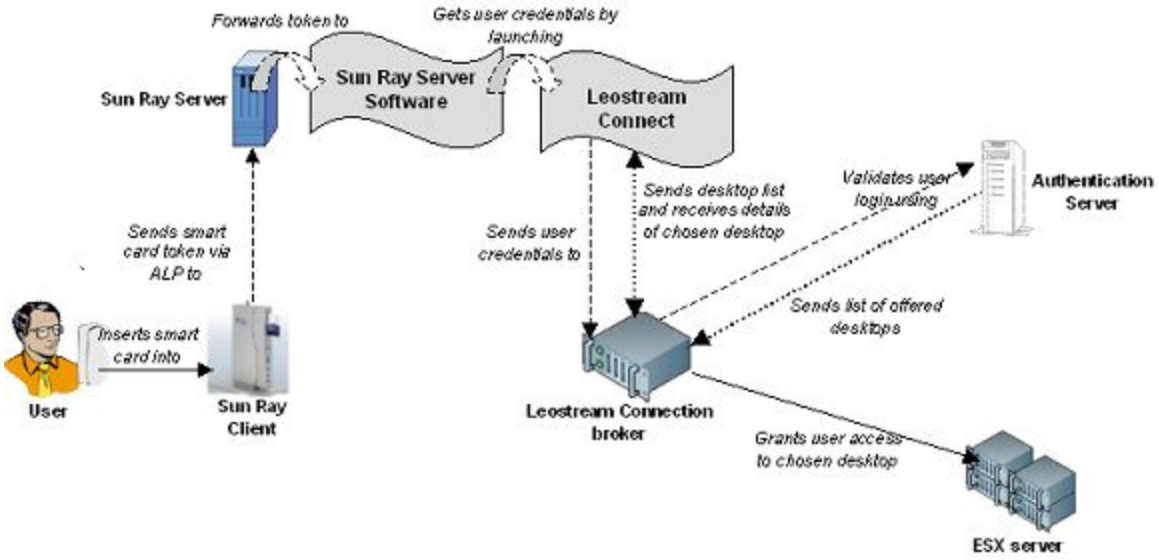

Figure 3.7: The Leostream Connection Broker

Once a user inserts his smart card into the Sun Ray DTU, the DTU reads the card and sends the unique card token to the Sun Ray Server Software (SRSS) component on the Sun Ray server via the highly efficient Sun Appliance Link Protocol (ALP). Upon receipt of the token, the Sun Ray server automatically launches Leostream Connect for Linux, where the users enter their authentication credentials. Leostream Connect then passes the user credentials to the Leostream Connection Broker which looks up the user in the authentication server, determines which policies to apply, and offers Desktops. Using Leostream Connect, the user selects which desktop to log in to. Leostream Connect passes this information to the Connection Broker.

The Connection Broker also sends Leostream Connect the list of Sun Ray servers associated with the VirtualCenter cluster on which the selected desktop sits. If a switch is needed, the Connection Broker picks a random Sun Ray server from the list and redirects the DTU to this host. The client launches one or

more RDP sessions using the Sun Ray Connector for Windows. Using this setup, the high-latency link to the SRSS is traversed using ALP and the low latency link between the SRSS server and the Desktop is crossed using RDP, with the SRSS server acts as a proxy. In the end, each user has his/her own DTU connected to a Sun Ray server, and the Sun Ray Connector for Windows connects them to a Desktop using the RDP protocol.

This test monitors the SunRay servers that the Connection Broker has discovered from VC clusters, and reports the status of each server.

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each Sun Ray client managed by the Connection Broker.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
User	To enable the test to log into the Connection Broker and extract statistics of interest from it, specify the login name of a user on the Connection Broker who is assigned the **Administrator** role. If need be, you can even create a special **Administrator** user on the Connection Broker for this purpose, and pass the credentials of that user to the test. Refer to Section **2.1** to know how to create such a user.
Password	Specify the password of the user here.
Confirm Password	Confirm the password by retyping it here.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.
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.

Parameter	Description
	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.
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.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Is the server alive?	Indicates whether the SunRay server is currently available for use or not.	Boolean	If the Sun Ray host is free, then this measure will report the value 1. If the Sun Ray host is not available, then the measure will report the value 0.
Is the Sun Ray host active?	Indicates whether the Sun Ray client is currently active or not.	Boolean	If the Sun Ray host is being actively used, then this measure will report the value 1. If the Sun Ray host is available but not actively used, then the measure will report the value 0.

3.1.7 Virtual Desktops Test

Typically, the Leostream Connection Broker provides users access to desktops based on access policies defined in the authentication server. Some users might possess exclusive access rights to specific desktops - in other words, some desktops could be 'hard-assigned' to certain users, such that every other user would be denied access to those desktops. As the number of desktops registered with the Connection Broker changes dynamically, at any given point in time, administrators might want to know the number of hard-assigned and policy-driven desktops that are

been actively used by users, and the number that is free, so that they can plan desktop assignments accordingly and ensure that no user runs out of desktops. The Virtual Desktops test enables administrators to figure out the total number of hard-assigned and policy-driven desktops registered with the Connection Broker, and helps them assess their status and usage. The measures made by this test are as follows:

Target of the test : A Leostream Connection Broker

Agent deploying the test : An internal agent

Outputs of the test : One set of results for *Policy_drive_VMs* and one for *User_assigned_VMs* being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	Specify the IP address of the Connection Broker for which the test is to be configured.
Port	Refers to the port used by the Connection Broker is listening.
SSL	By default, this flag is set to **No**, indicating that by default, the test connects to the Connection Broker via HTTP. If the Connection Broker is SSL-enabled, then set this flag to **Yes**.
User	To enable the test to log into the Connection Broker and extract statistics of interest from it, specify the login name of a user on the Connection Broker who is assigned the **Administrator** role. If need be, you can even create a special **Administrator** user on the Connection Broker for this purpose, and pass the credentials of that user to the test. Refer to Section **2.1** to know how to create such a user.
Password	Specify the password of the user here.
Confirm Password	Confirm the password by retyping it here.
Timeout	Specify the duration (in seconds) within which the test should timeout. The default duration is 30 seconds.
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.

Parameter	Description
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.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total desktops	Indicates the total number of desktops registered with the Connection Broker.	Number	
Powered desktops	Indicates the number of desktops that are currently powered on.	Number	
Available desktops	Indicates the number of desktops that are currently available for assignment to users.	Number	For instance, of a total of 10 desktops, if 6 are currently powered on and 1 is in maintenance, then it indicates that 5 (6-1) desktops are available for assignment to users. Use the detailed diagnosis of this measure to know which desktops are currently available.
Desktops with users	Indicates the number of desktops that are currently assigned to users.	Number	Use the detailed diagnosis of this measure to know which running desktops are in use.
Free desktops	Indicates the number of desktops to which no users are currently logged in.	Number	

Measurement	Description	Measurement Unit	Interpretation
Percent desktops with users	Indicates the percentage of available desktops that are currently assigned to users.	Percent	A very high value of this measure could indicate that subsequent users might not have desktops to access.
Unused desktops	Indicates the number of registered desktops that are not assigned to any user.	Number	
Percent unused desktops	Indicates the percentage of desktops that are not assigned to users.	Percent	

About eG Innovations

eG Innovations provides intelligent performance management solutions that automate and dramatically accelerate the discovery, diagnosis, and resolution of IT performance issues in on-premises, cloud and hybrid environments. Where traditional monitoring tools often fail to provide insight into the performance drivers of business services and user experience, eG Innovations provides total performance visibility across every layer and every tier of the IT infrastructure that supports the business service chain. From desktops to applications, from servers to network and storage, from virtualization to cloud, eG Innovations helps companies proactively discover, instantly diagnose, and rapidly resolve even the most challenging performance and user experience issues.

eG Innovations is dedicated to helping businesses across the globe transform IT service delivery into a competitive advantage and a center for productivity, growth and profit. Many of the world's largest businesses use eG Enterprise to enhance IT service performance, increase operational efficiency, ensure IT effectiveness and deliver on the ROI promise of transformational IT investments across physical, virtual and cloud environments.

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