Monitoring Citrix XA/XD Site 7.x

eG Innovations Product Documentation

www.eginnovations.com

Total Performance Visibility

Table of Contents

Table of Figures

Chapter 1: Introduction

Deployment of XenDesktop in a single geographical location may be called as a site. A site therefore typically comprises of one/more brokers that point to the same database, a database server, a license server, a Citrix Studio, Citrix StoreFront, hypervisors, virtual machines, and XenApp servers on the server-side, and receivers at the client side.

Monitoring a XA/XD site will therefore provide administrators with an overview of the hypervisors used, delivery groups managed, and desktops delivered by all the controllers in the site, and also points to probable problem areas. For this site-level overview of performance, eG Enterprise provides a dedicated Citrix XA/XD Site 7.x monitoring model.

Chapter 2: How to monitor the Citrix XA/XD Site 7.x using eG Enterprise?

eG Enterprise monitors the Citrix XA/XD Site in an agent-based manner. For this purpose, an eG agent should be deployed on any broker in the site. This agent then leverages the Citrix ODATA API and runs Citrix Powershell SDK commands on the broker to report on site composition and to monitor the connectivity between the monitored broker and key site components such as the license server, database server, hypervisors, etc. In the process, breaks in connectivity between the broker and a hypervisor and unavailability of the license server/database server can be promptly detected. In addition, delivery groups managed by all the brokers in the site are monitored, and state of server/desktop OS machines in each group is reported, so that powered-off/unavailable machines can be isolated. Before you start site monitoring, you need to set certain pre-requisites to enable the eG agent to use Citrix ODATA API and run Citrix Powershell SDK commands. These requirements have been explained in the following section.

2.1 Pre-requisites for monitoring the Citrix XA/XD Site 7.x

Typically, to enable the eG agent to pull out the status metrics from the Site and report anomalies, the following pre-requisites should be fulfilled:

1. The Domain, Username, and Password parameters of every test that the eG agent executes for the Citrix XA/XD Site 7.x component should be configured with the domain name and credentials (as the case may be) of a user with **Farm Administrator** rights.
2. The user should also be assigned the **Allow log on locally** security privilege on the Citrix XA/XD Site 7.x host. To achieve this do the following;
   - Go to the **Control Panel** in the host.
   - From the list of control panel items, click the **Administrative Tools** to view the set of tools available for system administrators and advanced users.
   - Upon selecting the **Local Security Policy** tool in the **Administrative Tools** location, the **Local Security Policy** settings console will appear.
   - Next, navigate to the **User Rights Assignment** node in the **Local Policies** tree in the left panel of the settings console. This will display the security policies corresponding to the user rights in the right panel.

- Now, select the **Allow log on locally** policy to assign the security privilege to the user.

3. The **eGurkhaAgent** service should run using the Local System account.

Once the above-said requirements are set in place, add the Citrix XA/XD Site 7.x component using the eG administrative interface to proceed the site monitoring. The steps for achieving this are briefed in the below section.

2.2 Managing the Citrix XA/XD Site 7.x

1. Log into the eG administrative interface.
2. eG Enterprise cannot automatically discover Citrix XA/XD site 7.x. You need to manually add the server using the **COMPONENTS** page (see Figure 2.1) that appears when the Infrastructure -> Components -> Add/Modify menu sequence is followed. Remember that components manually added are managed automatically.

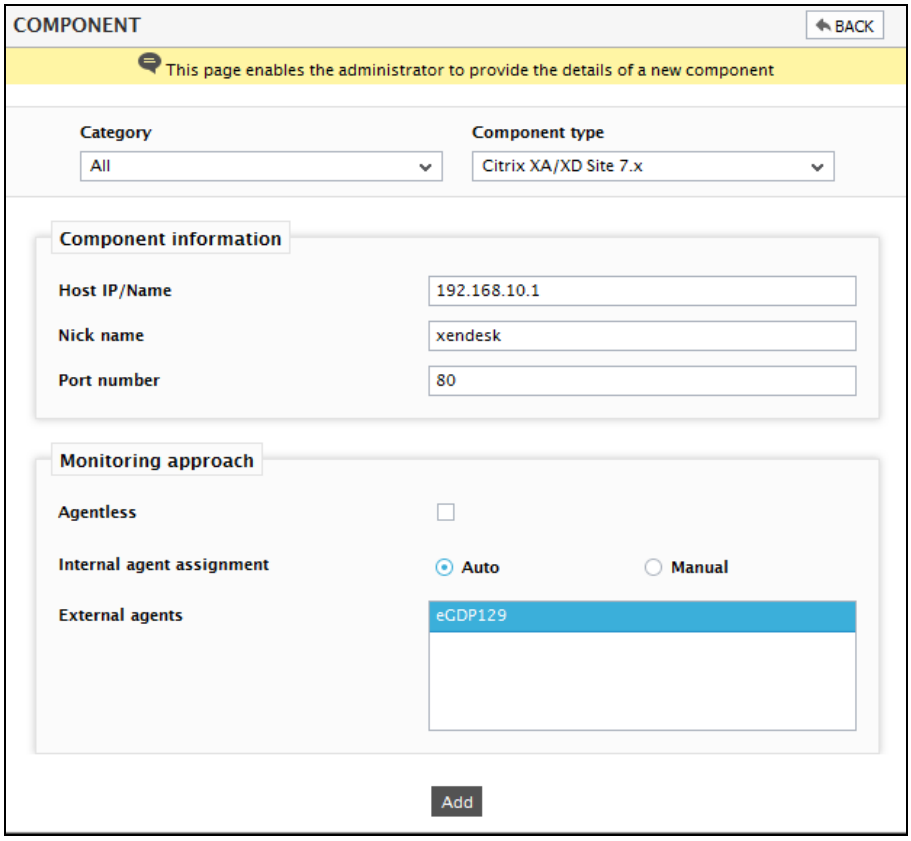
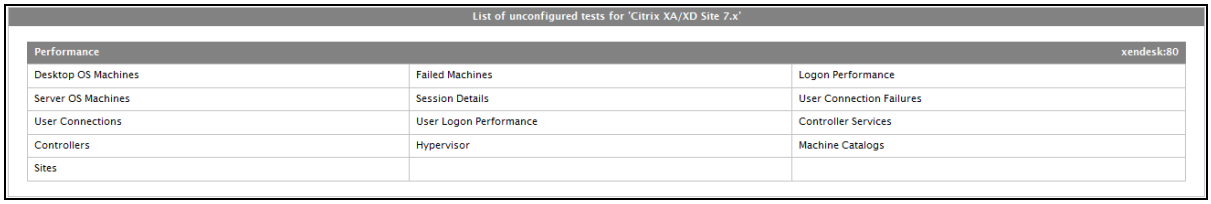


Figure 2.1: Adding a Citrix XA/XD site server

3. Specify the **Host IP** and the **Nick name** of the Citrix XA/XD site 7.x in Figure 2.1. Then click the **Add** button to register the changes.

4. When you attempt to sign out, a list of unconfigured tests will appear as shown in Figure 2.2.



List of unconfigured tests for 'Citrix XA/XD Site 7.x'

Performance		xendesk:80
Desktop OS Machines	Failed Machines	Logon Performance
Server OS Machines	Session Details	User Connection Failures
User Connections	User Logon Performance	Controller Services
Controllers	Hypervisor	Machine Catalogs
Sites		

Figure 2.2: List of Unconfigured tests to be configured for the Citrix XA/XD site server

5. Click on the **Desktop OS machines** test to configure it. To know how to configure the test, refer to Section **3.4.1**.
6. Once all the tests are configured, signout of the eG administrative interface.

Chapter 3: Monitoring the Citrix XA/XD Site 7.x

For site-level overview of performance, eG Enterprise provides a dedicated Citrix XA/XD Site 7.x monitoring model as shown in the figure given below.

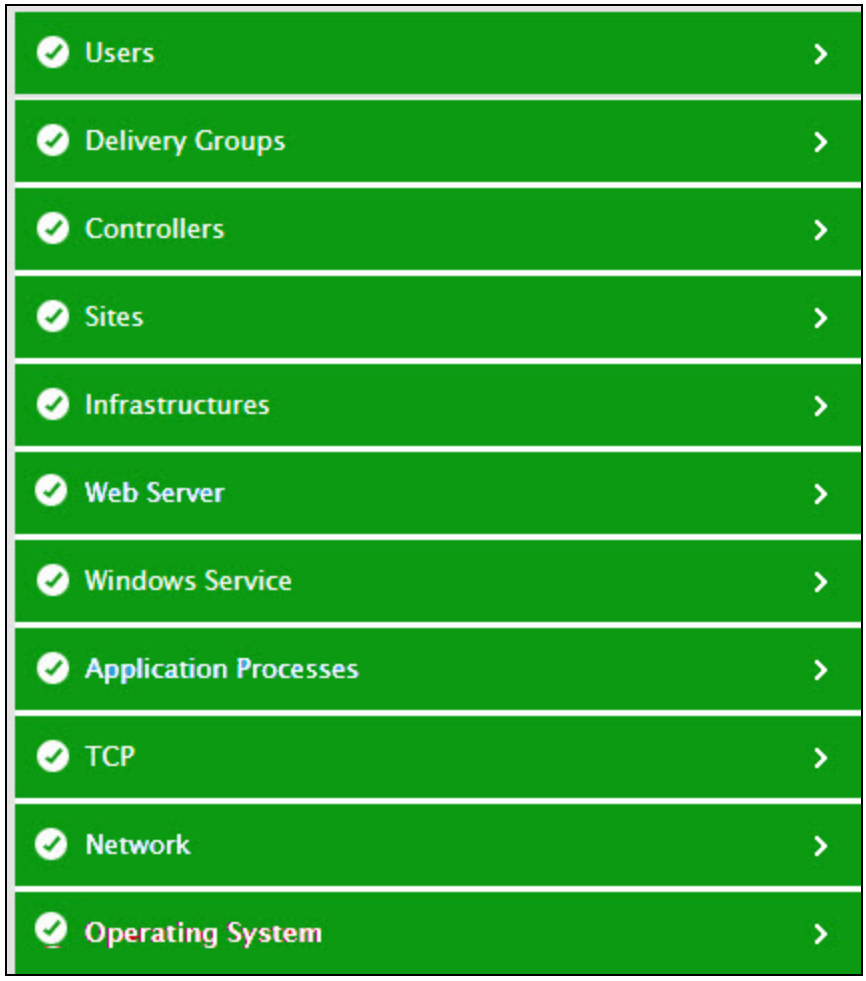


Figure 3.1: The layer model of a Citrix XA/XD Site 7.x

Each layer in Figure 3.1 above is mapped to tests that to pull out a wealth of performance information related to a broker site. To enable the eG agent to collect these metrics, you need to deploy the agent on any broker in the site. This agent then leverages the Citrix ODATA API and runs Citrix Powershell SDK commands on the broker to report on site composition and to monitor the connectivity between the monitored broker and key site components such as the license server, database server, hypervisors, etc. In the process, breaks in connectivity between the broker and a hypervisor and unavailability of the license server/database server can be promptly detected. In addition, delivery groups managed by all the brokers in the site are monitored, and state of

server/desktop OS machines in each group is reported, so that powered-off/unavailable machines can be isolated.

Note:

eG Enterprise does not require the Citrix Platinum License for monitoring the Citrix XA/XD Site 7.x.

Using the metrics so collected, administrators can find quick and accurate answers for the following performance queries:

- Is the controller not able to communicate with any hypervisor? If so, which hypervisor is it?
- Is the license server in the site available? If so, how quickly is it responding to requests?
- Have any controllers in the site been inactive for a long time? Which brokers are these?
- Is any controller powered-off now?
- Which controller in the site has failed?
- Are the critical site services running on the controller being monitored?
- Which delivery group is overloaded with desktop sessions?
- Are any machines in the site waiting for image updates? Which ones are these and which delivery group do they belong to?
- Which machines are in the 'Suspended' or 'Powered off' state currently?
- Which machines in the site have failed to start?
- Which machines are stuck on boot?
- Which are the machines that have violated their maximum load limit?
- Is any machine in the maintenance mode?
- Which machine has the highest load evaluator index? What is contributing to this - high CPU/memory/disk space usage? or high user session load?
- How many catalogs have been configured on the broker? What are they? What is the type of each catalog?
- How many machines in each catalog have been assigned to users, and how many are unassigned?
- Does any catalog consist of machines that do not belong to any delivery group?
- Which user's logon is taking the maximum time? Where is the user experiencing delays - when brokering? at VM startup? during HDX connection? during authentication? when applying GPOs?

at the time of logon script execution? when loading user profile? when handing off keyboard and mouse control to the user?

This document will elaborate on the top 5 layers of Figure 3.1 only.

3.1 The Infrastructures Layer

Use the test mapped to this layer to determine connectivity issues (if any) between the broker and the hosting platform.

Figure 3.2: The tests mapped to the Infrastructures layer

3.1.1 Hypervisor Test

This test reports the status of the connection between the delivery controller and each server that hosts the machines. In the absence of a healthy connection between the two, the controller may not be able to provision machines on-demand.

If users complaint of any delay in the servicing of their machine requests, you may want to use this test to check the connection status between the controller and the server hosting that machine, so that connection errors (if any) can be promptly detected.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each hypervisor with which the target controller communicates.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.

Parameter	Description
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
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
State of controller's connection to hypervisor	Indicates the status of the connection between the controller and this hosting server.		This test reports one of the following values to indicate the status of the connection between the controller and a hosting server: • On • InMaintenanceMode • Unavailable The numeric values that correspond to the above-mentioned states are as follows:

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>State</th><th>Numeric Value</th><th>Description</th></tr>
<tr><td>On</td><td>1</td><td>Indicates that the controller is in contact with the hypervisor</td></tr>
<tr><td>InMaintenanceMode</td><td>2</td><td>Indicates that the hosting server (e.g., XenServer, Hyper-V) through which machines are managed, is under maintenance</td></tr>
<tr><td>Unavailable</td><td>3</td><td>Indicates that the controller is unable to contact the hypervisor</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned States while indicating the connection status of the controller and the hypervisor. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents - 1 to 3 – only.
The detailed diagnosis capability of this measure if enabled, reveals the connection name, connection type, Hypervisor address, the preferred controller, the zone to which the controller belongs, and the user who is accessing the hypervisor.
</td></tr>
<tr><td>Is controller's</td><td>Indicates whether the</td><td></td><td>This measure reports a value Yes if the</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td>connection to hypervisor in maintenance mode?</td><td>connection between the controller and the hosting server is in maintenance mode.</td><td></td><td>connection between the controller and the hosting server is in maintenance mode and No if otherwise.

The numeric values corresponding to the above-mentioned measure values are as follows:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table>
Note:

By default, this measure reports the above-mentioned Measure Values while indicating whether the connection between the controller and the hosting server is in maintenance mode. However, the graph of this measure will be represented using the corresponding numeric equivalents i.e., 0 or 1 only.</td></tr>
<tr><td>Is controller's connection to hypervisor in persistent?</td><td>Indicates whether/not the connection is persistent between the controller and the hosting server.</td><td></td><td>This measure reports a value Yes if the connection between the controller and the hosting server is persistent and No if otherwise.

The numeric values corresponding to the above-mentioned Measure Values are as follows:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table>
Note:

By default, this measure reports the above-mentioned Measure Values while indicating whether the connection between the</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>controller and the hosting server is persistent. However, the graph of this measure will be represented using the corresponding numeric equivalents i.e., 0 or 1 only.</td></tr>
<tr><td>Is local storage caching enabled?</td><td>Indicates whether the local storage caching is enabled or not.</td><td></td><td>This measure reports a value Yes if the local storage caching capability is enabled and No if otherwise.

The numeric values corresponding to the above-mentioned measure values are as follows:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table>
Note:

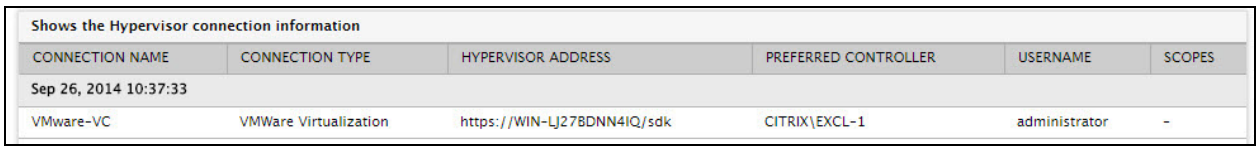
By default, this measure reports the above-mentioned Measure Values while indicating whether the local storage caching capability is enabled. However, the graph of this measure will be represented using the corresponding numeric equivalents i.e., 0 or 1 only.</td></tr>
<tr><td>Is provisioning service used to create VMs?</td><td>Indicates whether/not the provisioning service is used to create provisioned machines.</td><td></td><td>This measure reports a value Yes if the provisioning service is used to create provisioned machines and No if otherwise.

The numeric values corresponding to the above-mentioned measure values are as follows:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table>
Note:</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
			By default, this measure reports the above-mentioned **Measure Value**s while indicating whether the provisioning service is used to create provisioned machines. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents i.e., 0 or 1 only.

The detailed diagnosis of the *State of the controller's connection to Hypervisor* measure reveals the connection name, connection type, Hypervisor address, the preferred controller, the zone to which the controller belongs, and the user who is accessing the hypervisor.



Shows the Hypervisor connection information

CONNECTION NAME	CONNECTION TYPE	HYPERVISOR ADDRESS	PREFERRED CONTROLLER	USERNAME	SCOPES
Sep 26, 2014 10:37:33					
VMware-VC	VMWare Virtualization	https://WIN-LJ278DNN4IQ/sdk	CITRIX\EXCL-1	administrator	-

Figure 3.3: The detailed diagnosis of the State of the controller's connection to hypervisor measure

3.2 The Sites Layer

Using the test mapped to this layer, you can monitor the availability and responsiveness of the license server in the site, the session related information and the number of brokers managed by this site.

Figure 3.4: The test mapped to the Sites layer

3.2.1 Sites Test

This test promptly alerts administrators to the following anomalies related to the monitored site:

- The sudden non-availability of the license server in the site;
- Poor responsiveness of the license server;

- A session overload on the site;
- Inactive brokers in the site

In addition, the test also monitors license usage by the site and alerts administrators if the license has entered its grace period or is about to expire.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the Citrix XA/XD Site 7.x to which the target controller belongs.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
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
License server availability	Indicates the availability of the license server in this site.	Percent	If the license server is available, a value of 100 is shown and if the license server is not available, a value of 0 is shown. Since the license server is responsible for managing the licenses for all the components of XenDesktop, the non-availability of the license server, should have serious repercussions on the performance of the XenDesktop site. However, such adversities are averted by the 90-day grace period that XenDesktop embeds; this allows the system to function normally for 90 days if the license server becomes unavailable. Moreover, if this measure reports that the license server is unavailable, then you may instantly want to know which license server the XenDesktop is communicating with. At this juncture, you can use the detailed diagnosis of this measure (if enabled) to ascertain the name of the license server and the port at which it listens.
License server response time	Indicates the time taken by the controller to establish a connection with the license server.	Secs	Ideally, the response time should be low.
Active licensed sessions	Indicates the total number of licensed sessions that are currently active on this site.	Number	This measure is a good indicator of the load on this site and the extent of license usage.
Is DNS resolution enabled?	Indicates whether the DNS resolution is enabled or not on this site.		The values and their corresponding numeric values that this measure could report are:

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>No</td><td>0</td></tr>
<tr><td>Yes</td><td>1</td></tr>
</table>
Note:
By default, this measure reports the values Yes or No while indicating whether DNS resolution is enabled or not on this site. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.
</td></tr>
<tr><td>Is secure ICA required?</td><td>Indicates whether/not a secure ICA is required for this site.</td><td></td><td>By default, client-server communications are obfuscated at a basic level through the SecureICA feature, which can be used to encrypt the ICA protocol.

Plug-ins use the ICA protocol to encode user input (keystrokes and mouse clicks) and address it to a server farm for processing. Server farms use the ICA protocol to format application output (display and audio) and return it to the client device.

You can increase the level of encryption for the ICA protocol when you publish a resource or after you publish a resource.

In addition to situations when you want to protect against internal security threats, such as eavesdropping, you may want to use ICA encryption in the following situations:

You need to secure communications from devices that use Microsoft DOS or run on Win16 systems</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>You have older devices running plug-in software that cannot be upgraded to use SSL

As an alternative to SSL/TLS encryption, when there is no risk of a “man-in-the-middle” attack

The values that this measure can report and their corresponding numeric values are:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:

By default, this measure reports the values Yes or No while indicating whether a secure ICA is required for this site or not. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.</td></tr>
<tr><td>Is the trust request sent to the XML service port?</td><td>Indicates whether/not trust requests were sent to the XML service.</td><td></td><td>Trusting requests sent to the XML Service means:

• Smooth Roaming works when connecting with the Web Interface using pass-through or smart card authentication, and when connecting with the online plug-in using smart card authentication or the Kerberos pass-through option.

• For example, you can use workspace control to assist health-</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>care workers in a hospital using smart cards, who need to move quickly among workstations and be able to pick up where they left off in published applications.

• XenApp can use the information passed on from Access Gateway (Version 4.0 or later) to control application access and session policies. This information includes Access Gateway filters that can be used to control access to published applications and to set XenApp session policies. If you do not trust requests sent to the XML Service, this additional information is ignored.

The values that this measure can report and their corresponding numeric values are:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:

By default, this measure reports the values Yes or No while indicating whether/not trust requests were sent to the XML service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
Total controllers on this site	Indicates the total number of controllers that are configured for this site.	Number	The detailed diagnosis of this measure displays the names of the controllers of this site, the zone to which the controller belongs, the machine on which the controller is installed, total number of desktops managed by this controller, the state of the controller, the version of the controller, the type of operating system, the version of the operating system, the last time at which the controller was active. This information helps you to identify the brokers that are active and are utilized effectively.
Is connection leasing enabled?	Indicates whether/not connection leasing is enabled for this site.		To ensure that the Site database is always available, Citrix recommends starting with a fault-tolerant SQL Server deployment by following high availability best practices from Microsoft. However, network issues and interruptions may prevent Delivery Controllers from accessing the database, resulting in users not being able to connect to their applications or desktop. The connection leasing feature supplements the SQL Server high availability best practices by enabling users to connect and reconnect to their most recently used applications and desktops, even when the Site database is not available. Although users may have a large number of published resources available, they often use only a few of them regularly. When you enable connection leasing, each Controller caches user connections to those recently used applications and

Measurement	Description	Measurement Unit	Interpretation
			desktops during normal operations (when the database is available). The leases generated on each Controller are uploaded to the Site database for periodic synchronization to other Controllers on the Site. In addition to leases, each Controller's cache holds application, desktop, icon, and worker information. The lease and related information is stored on each Controller's local disk. If the database becomes unavailable, the Controller enters leased connection mode and "replays" the cached operations when a user attempts to connect or reconnect to a recently used application or desktop from StoreFront. Connections are cached for a lease period of two weeks. So, if the database becomes unavailable, the desktops and applications that the user launched in the previous two weeks remain accessible to that user through StoreFront. However, desktops and applications that have not been launched during the previous two-week lease period are not accessible when the database is unavailable. Connection leasing is enabled by default. You can turn connection leasing off or on from the PowerShell SDK or the Windows registry. This measure reports the value *Yes* if connection leasing is enabled for a site and the value *No* if connection leasing is not enabled for a site. The numeric values that correspond to

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>these measure values are as follows:
<table><tr><th>Measure value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:
By default, this measure reports the values Yes or No while indicating whether/not connection leasing is enabled for the site. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.</td></tr>
<tr><td>Is license in grace period?</td><td>Indicates whether/not the license for this site is in the grace period.</td><td></td><td>In previous versions of XenApp and XenDesktop, if the correct licenses are not installed, users will get session rejections via the license policy engine. To avoid this limitation, Citrix introduced a new concept called Supplemental Grace Period (SGP) in XenApp/XenDesktop 7.6. During the SGP, the license policy engine will grant unlimited connections, for about 15 days to allow for fixing the issue. An alarm is activated when the grace period expires, and the Delivery Controller can not checkout licenses to launch sessions from license server. After the expiration of SGP, regular license limits are enforced.
If the license for the site is in the grace period, then the value of this measure will be Yes. If the license has not entered the grace period, then the value of this measure will be No.
The numeric values that correspond to</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>these measure values are as follows:
<table><tr><th>Measure value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:
By default, this measure reports the values Yes or No while indicating whether/not the site license is in the grace period. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.</td></tr>
<tr><td>Is license in out of box grace period?</td><td>Indicates whether/not the license grace period for this site has expired.</td><td></td><td>If the license for the site has lived out its grace period, then the value of this measure will be Yes. If the license grace period has not expired, then the value of this measure will be No.
The numeric values that correspond to these measure values are as follows:
<table><tr><th>Measure value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:
By default, this measure reports the values Yes or No while indicating whether/not the grace period of the site license has expired. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents of 0 and 1 only.</td></tr>
<tr><td>License grace hours left</td><td>Indicates how much time (in hours) is left for the</td><td>Hours</td><td>This measure will report a value only if the value of the 'Is license in</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
	grace period to expire.		**grace period?' measure is 'Yes'**. If the value of this measure is low, then you may want to quickly install additional licenses on the site to ensure that your users receive uninterrupted access to their critical applications and desktops. Because, upon the expiry of the grace period, the Delivery Controllers in the site can not checkout licenses to launch sessions from license server.
Total registered machine on this site	Indicates the number of registered machined on the site.	Number	

The detailed diagnosis of the *License server availability* measure displays the name of the License server in the site and the port at which it listens. Alongside, the detailed diagnosis displays the desktop model, desktop edition, application model and application edition that is compatible with the license. The date on which the license would finally expire/the last date for renewal of the license is provided in the **REQUIRED SA DATE** column. This information enables administrators to effectively troubleshoot issues with the availability of the License server.

Shows the license server information on this site

SITE NAME	LICENSE SERVER NAME	LICENSE SERVER PORT	LICENSE EDITION	LICENSE MODEL	REQUIRED SA DATE
Sep 26, 2014 10:44:19					
XenDesk7	EXCL-1.Citrix.eginnovations.com	27000	Platinum Edition	User/Device	5/22/2013 5:30:00 AM

Figure 3.5: The detailed diagnosis of the License server availability measure

The detailed diagnosis of the *Total controllers on this site* measure displays the names of the controllers of this site, the zone to which the controller belongs, the machine on which the controller is installed, total number of desktops managed by this controller, the state of the controller, the version of the controller, the type of operating system, the version of the operating system, the last time at which the controller was active. This information helps you to identify the brokers that are active and are utilized effectively.

Shows the list of contollers on this site

MACHINE NAME	DNS NAME	CONTOLLER STATE	TOTAL MACHINES	CONTROLLER VERSION	OS	OS VERSION	LAST ACTIVE TIME
Sep 26, 2014 10:44:19							
CITRIX\EXCL-1	EXCL-1.Citrix.eginnovations.com	Active	1	7.0.0.3012	Win32NT	6.1.7601.65536	9/26/2014 10:42:29 AM
CITRIX\EXCL-2	EXCL-2.Citrix.eginnovations.com	Active	2	7.0.0.3012	Win32NT	6.1.7601.65536	9/26/2014 10:42:27 AM

Figure 3.6: The detailed diagnosis of the Total controllers on this site measure

3.3 The Controllers Layer

For each controller in a site, the tests mapped to this layer report the current state of the controller and the state of each critical service running on the controller. Abnormalities in controller operations can thus be captured quickly.

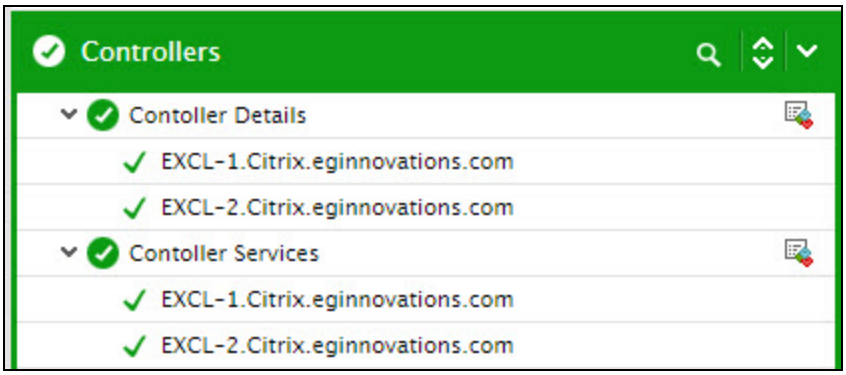


Figure 3.7: The tests mapped to the Controllers layer

3.3.1 Controllers Test

Controllers are server machines running instances of the broker service. This test auto-discovers the delivery controllers configured within a site, and reports the current status of each controller and the count of machines registered with every controller.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the XenDesktop server site to which the target controller belongs.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
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

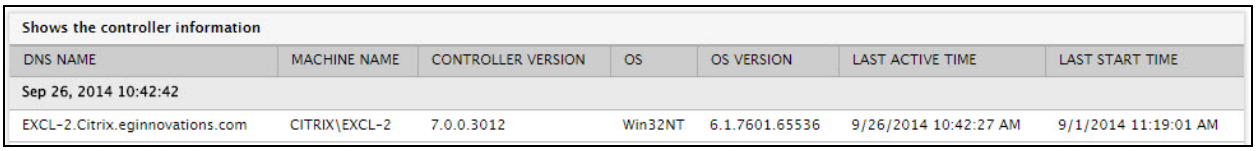
Measurement	Description	Measurement Unit	Interpretation
Controller state	Indicates the current state of this desktop delivery controller.	Number	This test reports one of the following values to indicate the current state of a desktop delivery controller: • Active – Indicates that the controller is powered-on and fully operational

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>

On – Indicates that the controller is powered-on, but not fully operational
Failed – Indicates that the controller has failed due to some reason
Off – Indicates that the controller is powered-off

The numeric values that correspond to the above-mentioned states are as follows:
<table>
<tr><th>State</th><th>Numeric Value</th></tr>
<tr><td>Active</td><td>1</td></tr>
<tr><td>On</td><td>2</td></tr>
<tr><td>Failed</td><td>3</td></tr>
<tr><td>Off</td><td>4</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned States while indicating the current state of a controller. However, the graph of this measure will represent states using the corresponding numeric equivalents – i.e., 1 to 4.
The detailed diagnosis of this measure reveals when the controller was last accessed, when it was last started, the zone to which the controller belongs, and also displays the site services that were active on the controller during its last access.
</td></tr>
<tr><td>Total registered machines</td><td>Indicates the number of machines that are currently registered with this controller.</td><td>Number</td><td></td></tr>
</table>

The detailed diagnosis of the *Controller state* measure reveals when the controller was last accessed, when it was last started, the zone to which the controller belongs, and also displays the name of the machine on which the controller is installed, the version of the controller, the Operating system of the machine and the Operating system version.



Shows the controller information

DNS NAME	MACHINE NAME	CONTROLLER VERSION	OS	OS VERSION	LAST ACTIVE TIME	LAST START TIME
Sep 26, 2014 10:42:42						
EXCL-2.Citrix.eginnovations.com	CITRIX\EXCL-2	7.0.0.3012	Win32NT	6.1.7601.65536	9/26/2014 10:42:27 AM	9/1/2014 11:19:01 AM

Figure 3.8: The detailed diagnosis of the Controller state measure

3.3.2 Controller Services Test

The broker service is responsible for the brokering of user sessions to desktops or applications, and for power management of the underlying machines. Every controller in a site runs an instance of the broker service. In addition to the broker service, the following critical services also run on a controller:

- AD identity service
- Configuration service
- Host service
- Machine creation service
- Admin service
- Monitoring service
- Logging service

This test periodically checks the health of each of these services on the target controller in a XenDesktop site, and reports abnormalities (if any). With the help of this test, you can promptly detect which services have failed.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every controller configured within a site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
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
Broker service status	Indicates the current status of the broker service on this controller.	Number	The Citrix Broker Service brokers connections from endpoint devices to desktops and applications. The numeric values that correspond to the Measure Values that this measure can take are as follows:

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNewerVersionThanService</td><td>5</td></tr>
<tr><td>DBOlderVersionThanService</td><td>6</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>7</td></tr>
<tr><td>PendingFailure</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
<tr><td>DBNotFound</td><td>11</td></tr>
<tr><td>DBMissingOptionalFeature</td><td>12</td></tr>
<tr><td>DBMissingMandatoryFeature</td><td>13</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current state of the broker service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 13.
</td></tr>
<tr><td>AD identity service status</td><td>Indicates the current status of the AD Identity Service on this controller.</td><td></td><td>The Citrix AD Identity Service manages active directory computer accounts. Once the controller validates a user login, this service connects to the controller’s database to identify the virtual desktop that is assigned to the user who has logged in.
The values that this measure reports and</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>the numeric values that correspond to them are as follows:

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>OK</td><td>1</td></tr><tr><td>DBUnconfigured</td><td>2</td></tr><tr><td>DBRejectedConnection</td><td>3</td></tr><tr><td>InvalidDBConfigured</td><td>4</td></tr><tr><td>DBNotFound</td><td>5</td></tr><tr><td>DBNewerVersionThanService</td><td>6</td></tr><tr><td>DBOlderVersionThanService</td><td>7</td></tr><tr><td>DBVersionChangeInProgress</td><td>8</td></tr><tr><td>Failed</td><td>9</td></tr><tr><td>Unknown</td><td>10</td></tr></table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the AD Identity Service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.</td></tr>
<tr><td>Configuration service status</td><td>Indicates the current status of the Configuration Service on this controller.</td><td></td><td>The Citrix Configuration Service stores the configuration information related to Citrix services in the controller’s MS SQL database.
The values that this measure can report and their corresponding numeric values are as follows:</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Configuration service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Host service status</td><td>Indicates the current status of the Host service on this controller.</td><td></td><td>The Citrix Host Service manages host and hypervisor connections.
The values that this measure can take and their corresponding numeric values are as follows:
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Configuration service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Machine creation service status</td><td>Indicates the current status of the Machine Creation Service on this controller.</td><td></td><td>The Citrix Machine Creation Service creates new virtual machines.
Once a valid user logs into the Citrix Delivery Controllervia the Web Interface, the controller manages the delivery groups by building, starting, and shutting down the desktops as required. At this juncture, the controller relies on Machine Creation Services (MCS) to deliver the appropriate desktop image to the Pooled and Dedicated delivery groups.
The values that this measure can take and their corresponding numeric equivalents are as follows:</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Machine creation service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Admin service status:</td><td>Indicates the current status of the Delegated Administration service on this controller.</td><td></td><td>The Delegated Administration Service (DAS) stores information about Citrix administrators and the rights they have. Services in the XenDesktop deployment use the DAS to determine whether a particular user has the privilege to perform an operation or not.
The values that this measure can report and their corresponding numeric equivalents are as follows:</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Delegated Administration service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Licensing service status</td><td>Indicates the current status of the Licensing service on this controller.</td><td></td><td>The values that this measure can take and their corresponding numeric values are as follows:
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Licensing service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Monitoring service status</td><td>Indicates the current status of the Monitoring service on this controller.</td><td></td><td>The Citrix Monitor Service monitors the Flexcast system. Citrix FlexCast is a delivery technology that allows an IT administrator to personalize virtual desktops to meet the performance, security and flexibility requirements of end users. Currently, there are five different FlexCast models available.
The values that this measure can take and their corresponding numeric values are as follows:</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Monitoring service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
<tr><td>Logging service status</td><td>Indicates the current status of the Logging service on this controller.</td><td></td><td>The Configuration Logging Service logs configuration changes or administrator requested state changes made to the site.
The values that this measure can take and their corresponding numeric values are as follows:
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>OK</td><td>1</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Measure Value</th><th>Numeric Value</th></tr>
<tr><td>DBUnconfigured</td><td>2</td></tr>
<tr><td>DBRejectedConnection</td><td>3</td></tr>
<tr><td>InvalidDBConfigured</td><td>4</td></tr>
<tr><td>DBNotFound</td><td>5</td></tr>
<tr><td>DBNewerVersionThanService</td><td>6</td></tr>
<tr><td>DBOlderVersionThanService</td><td>7</td></tr>
<tr><td>DBVersionChangeInProgress</td><td>8</td></tr>
<tr><td>Failed</td><td>9</td></tr>
<tr><td>Unknown</td><td>10</td></tr>
</table>
Note:
By default, this measure reports the above-mentioned Measure Values while indicating the current status of the Monitoring service. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents – i.e., 1 to 10.
</td></tr>
</table>

3.4 The Delivery Groups Layer

The tests mapped to this layer monitor the desktop OS and server OS machines in each delivery group configured on the broker in a site and report the status of these machines.

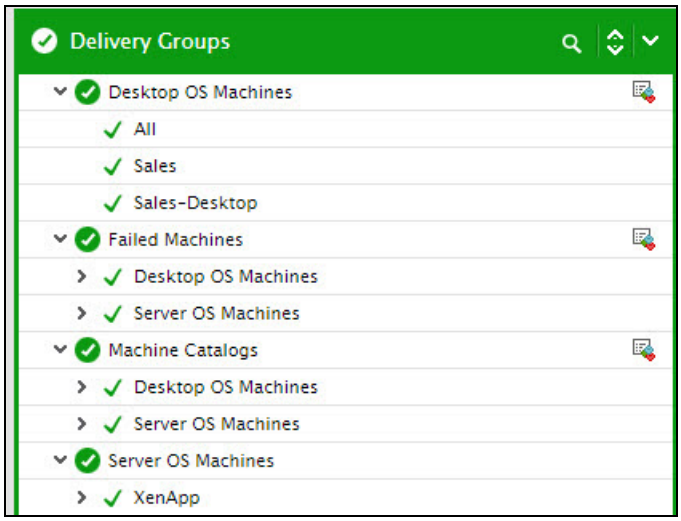


Figure 3.9: The tests mapped to the Delivery Groups layer

3.4.1 Desktop OS Machines Test

XenDesktop supports two types of Delivery Agents: one for Windows Server OS machines and one for Windows Desktop OS machines. **Desktop OS Machines** are VMs or physical machines based on the Windows Desktop operating system used for delivering personalized desktops to users, or applications from desktop operating systems.

Delivery groups consist of virtual desktops and applications that are pooled, pre-assigned, or assigned on first use. Each group can contain only one type of desktop or application.

To track the status of desktop OS machines in each delivery group configured in a site, use the **Desktop OS Machines** test.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group containing desktop OS machines in the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.

Parameter	Description
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	Specify the IP address of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3** topic.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
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.

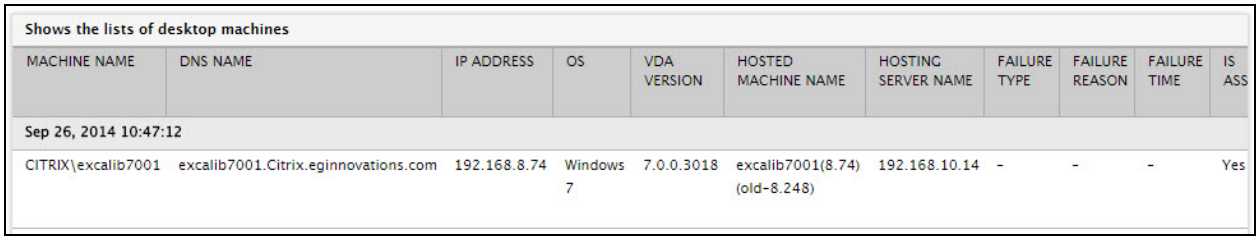
Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Total machines	Indicates the total number of machines in this group.	Number	Use the detailed diagnosis of this measure to know which desktop OS machines are part of a delivery group.
Preparing machines	Indicates the number of machines in this group that are currently preparing sessions for users.	Number	
Pending image update machines	Indicates the number of machines managed by this delivery group to which updates are currently pending.	Number	Use the detailed diagnosis of this measure to know which machines are awaiting updates.
Maintenance mode enabled machines	Indicates the number of machines in this group for which maintenance mode has been enabled.	Number	
Powered on machines:	Indicates the number of machines in this desktop group that are currently powered on.	Number	Use the detailed diagnosis of this measure to know which machines are currently powered on.
Machines with suspended power state	Indicates the number of machines in this delivery group that are currently in the Suspended state.	Number	Use the detailed diagnosis of this measure to know which machines are currently in the Suspended state.
Powered off machines	Indicates the number of machines in this delivery group that are currently powered off.	Number	Use the detailed diagnosis of this measure to know which machines are currently in the powered off.
Machines with unknown power state	Indicates the number of machines in the following power states: • Unavailable • Unmanaged	Number	A low value is desired for this measure. The detailed diagnosis of this measure will reveal the complete details of the unavailable machines, such as, the machine name, IP address, the

Measurement	Description	Measurement Unit	Interpretation
	• Unknown		machine type, the delivery group and catalog to which the machine belongs, the hosting server on which the machine operates, the name of the hypervisor and the controller on which the machine operates, the user who is active on the session, the location at whih the changes made by the user is stored, the provision type of the machine, and the application published on the machine, if the machine is a XenAPP server.
Assigned machines	Indicates the number of machines that are assigned to users in this delivery group.	Number	Use the detailed diagnosis of this measure to know which machines are assigned to users.
Unassigned machines	Indicates the number of machines in this delivery group that are not assigned to users.	Number	Use the detailed diagnosis of this measure to know which machines are not assigned to users.
Resuming machines	Indicates the number of machines in this group that are in the Resume state currently.	Number	Use the detailed diagnosis of this measure to know which machines are in the Resume state.
Total sessions	Indicates the total number of user sessions to this delivery group.	Number	
Percentage of assigned machines	Indicates the percentage of machines that are assigned to users in this delivery group.	Percent	
Desktop utilization	Indicates the percentage of desktops in this delivery group to which users are currently logged in.	Percent	A value close to 100% indicates that almost all desktops in the group are in use. Under such circumstances, you may want to add more desktops to the group to meet with the demand for desktops.

Measurement	Description	Measurement Unit	Interpretation
Unregistered machines	Indicates the number of machines that are configured in this delivery group but are in an unregistered state.	Number	If a machine is in an unregistered state, it means that registration has not successfully completed for that machine. The value 0 is hence desired for this measure. In case the measure reports a non-zero value, you may want to enable the detailed diagnosis for this measure, so that you can view which machines in the group are unregistered.
Percentage of unregistered machines	Indicates the percentage of machines that are configured in this delivery group but are in an unregistered state.	Percentage	A low value is desired for this measure.
Percentage of maintenance mode enabled machines	Indicates the percentage of machines in this group for which maintenance mode has been enabled.	Percentage	

Use the detailed diagnosis of the *Total machines* measure to know which desktop OS machines are part of a delivery group.

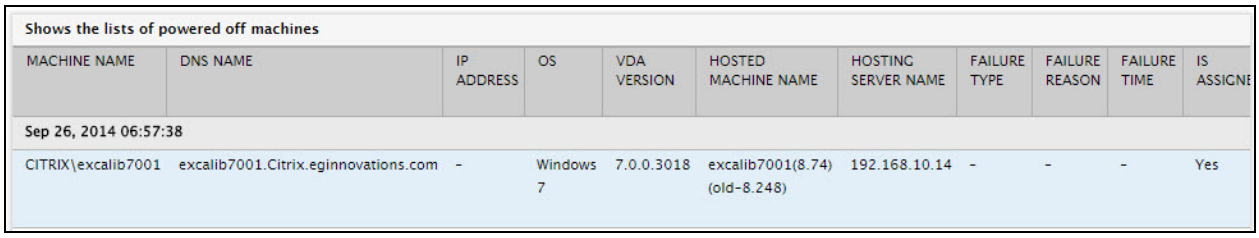


Shows the lists of desktop machines

MACHINE NAME	DNS NAME	IP ADDRESS	OS	VDA VERSION	HOSTED MACHINE NAME	HOSTING SERVER NAME	FAILURE TYPE	FAILURE REASON	FAILURE TIME	IS ASS
Sep 26, 2014 10:47:12										
CITRIX\excalib7001	excalib7001.Citrix.eginnovations.com	192.168.8.74	Windows 7	7.0.0.3018	excalib7001(8.74) (old-8.248)	192.168.10.14	-	-	-	Yes

Figure 3.10: The detailed diagnosis of the Total machines measure

For a list of powered off machines in a delivery group, use the detailed diagnosis of the *Powered off machines* measure.



Shows the lists of powered off machines

MACHINE NAME	DNS NAME	IP ADDRESS	OS	VDA VERSION	HOSTED MACHINE NAME	HOSTING SERVER NAME	FAILURE TYPE	FAILURE REASON	FAILURE TIME	IS ASSIGNE
Sep 26, 2014 06:57:38										
CITRIX\excalib7001	excalib7001.Citrix.eginnovations.com	-	Windows 7	7.0.0.3018	excalib7001(8.74) (old-8.248)	192.168.10.14	-	-	-	Yes

Figure 3.11: The detailed diagnosis of the Powered off machines measure

3.4.2 Failed Machines Test

Using this test, administrator can figure out how many machines of which type are currently in a state of failure. The names of these machines and the precise failure state they are in presently can also be ascertained.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group configured for the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will not be able to monitor the site any longer**. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single

Parameter	Description
	controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by Machine Type	If you want the results of this test to be grouped by machine type – i.e., grouped into **Desktop OS Machines** and **Server OS Machines** – then set this flag to **Yes**. If not, set this flag to **No**.
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

Meas-urement	Description	Meas-urement Unit	Interpretation
Machines that	Indicates the	Number	A high value for these measures is a cause for concern. Use

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td>failed to start</td><td>number of machines in this delivery group that failed to start.</td><td></td><td>the detailed diagnosis of each of these measures to know which machines failed to start and which ones are stuck on boot.

A machine may fail to start or get stuck on boot owing to any of the following reasons:

<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Hypervisor Reported Failure</td><td>The hypervisor reported an error</td></tr>
<tr><td>Agent Shutdown</td><td>The VDA experienced a graceful shutdown</td></tr>
<tr><td>Agent Suspended</td><td>The VDA is in hibernation or sleep mode.</td></tr>
<tr><td>Power Off</td><td>The VDA did not shut down gracefully.</td></tr>
</table>

To know what action to take against each of the reasons discussed above, use the table below:

<table>
<tr><th>Cause</th><th>Action</th></tr>
<tr><td>Hypervisor Reported Failure</td><td>Escalate to hypervisor support team to review hypervisor settings</td></tr>
<tr><td>Agent Shutdown</td><td>Power on the VDA if it should not be off based on existing power management policies. Review any errors in the event logs.</td></tr>
<tr><td>Agent Suspended</td><td>• Take the VDA out of hibernation mode if it should be active.
• Consider disabling hibernation for XenApp/XenDesktop VDA’s via power settings.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td rowspan="2"><table><tr><td>Power Off</td><td>If the VDA is supposed to be powered on, attempt to start the VDA within Studio and validate it boots up and registers correctly. Troubleshoot any boot or registration issues.
Review the event logs on the VDA once it is back up to help determine the root cause of the shutdown.
Review the hypervisor activity logs for information related to the VDA machine.</td></tr></table></td></tr>
<tr><td>Machines stuck on boot</td><td>Indicates the number of machines that are stuck on boot.</td><td>Number</td></tr>
<tr><td>Unregistered machines</td><td>Indicates the number of machines in this delivery group that are not registered with the controller.</td><td>Number</td><td>A high value for this measure is a cause for concern. In such situations, refer to Troubleshooting Unregistered Machines to know the probable causes for this anomaly and tips for troubleshooting it.
Use the detailed diagnosis of this measure to identify the unregistered machines.</td></tr>
<tr><td>Maximum load</td><td>Indicates the number of machines in this delivery group that have violated their maximum load limit.</td><td>Number</td><td>This measure applies only to Server OS Machines.
Ideally, the value of this measure should be low. If this measure reports a high value, then use the detailed diagnosis of this measure to identify the loaded machines.
To know what could have caused this problem condition, use the table below:<table><tr><th>Cause</th><th>Description</th></tr><tr><td>Hypervisor Reported Failure</td><td>The hypervisor reported an error</td></tr></table></td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>Send settings failure</td><td>The Broker failed to send settings and configuration data to the VDA. As part of the hard registration process, the Broker gathers and sends settings and configurations to the VDA. If the Broker is able to gather the data, but is unable to send it, hard registration fails and this failure reason results.</td></tr>
<tr><td>Session Prepare Failure</td><td>The Broker failed to notify the VDA to prepare to host a session. When a user requests a connection to a VDA and the VDA is hard registered, the broker notifies the VDA to prepare to be contacted by a receiver instance. If the call fails, the VDA is forcibly deregistered, resulting in this failure.</td></tr>
<tr><td>Session Audit Failure</td><td>The broker failed to complete an audit of the sessions that are running on the VDA.</td></tr>
</table>
</td></tr>
<tr><td>Machines that failed to start recently</td><td>Indicates the number of machines that failed to start during the last measuremen t period.</td><td>Number</td><td>Use the detailed diagnosis of this measure to identify the machines that failed to start in the recent past. For the reasons for this failure and how to fix it, refer to the Interpretation for the Machines that failed to start measure.</td></tr>
<tr><td>Machines stuck on boot recently</td><td>Indicates the number of machines that stuck on boot during the last measuremen t period.</td><td>Number</td><td>Use the detailed diagnosis of this measure to identify the machines that stuck on boot in the recent past. For the reasons for this failure and how to fix it, refer to the Interpretation for the Machines stuck on boot measure.</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
Recently unregistered machines	Indicates the number of machines that were not registered with the controller during the last measurement period.	Number	Use the detailed diagnosis of this measure to identify the machines that were not registered with the controller in the recent past. For the reasons for this failure and how to fix it, refer to Troubleshooting Unregistered Machines.
Machines that reached maximum load recently	Indicates the number of machines that violated their maximum load limit during the last measurement period.	Number	Use the detailed diagnosis of this measure to identify the loaded machines in the recent past.

3.4.2.1 Troubleshooting Unregistered Machines

There are many reasons why a machine may not be registered with the controller. The table below lists these reasons and also discusses how to fix them:

Cause	Description	Action
Hypervisor Reported Failure	The hypervisor reported an error.	Escalate to hypervisor support team to review hypervisor settings
Agent Shutdown	The VDA experienced a graceful shutdown	Power on the VDA if it should not be off based on existing power management policies. Review any errors in the event logs.
Agent Suspended	The VDA is in hibernation or sleep mode.	• Take the VDA out of hibernation mode if it should be active. • Consider disabling hibernation for XenApp/XenDesktop VDA's via power settings.

Power Off	The VDA did not shut down gracefully.	• If the VDA is supposed to be powered on, attempt to start the VDA within Studio and validate it boots up and registers correctly. Troubleshoot any boot or registration issues. • Review the event logs on the VDA once it is back up to help determine the root cause of the shutdown. • Review the hypervisor activity logs for information related to the VDA machine.
Agent Address Resolution Failed	The Controller was not able to resolve the VDA's IP address.	• Verify that the VDA machine account exists in AD. If not, create it. • Verify that name and IP address of the VDA machine in DNS are correct and alter if needed. • If a widespread issue, validate the DNS settings on the Controller(s). Verify DNS resolution from the Controller by running the nslookup command.
Agent Rejected Settings Update	Settings, such as Citrix policies, were changed or updated but there was an error in sending the updates to the VDA. This may occur if the updates are incompatible with the installed VDA version.	• Upgrade the VDA if necessary • Review whether the updates that were applied are supported with the VDA version.
Agent Wrong Active Directory OU	An Active Directory discovery misconfiguration occurred. The site-specific OU (where the site controller information is stored in AD) configured in the VDA registry is for a different site.	• Ensure the Active Directory configuration is correct, or check registry settings. • This only applies if AD OU-based discovery is used for registration as described here.
Single Multi Session Mismatch	The VDA machine's operating system type is not compatible with the Machine Catalog or Delivery Group.	Add the VDA to the correct machine catalog type or Delivery Group containing machines with the same operating system.
Agent Not Contactable	A communication issue occurred between the	• Verify the DDC and VDA can successfully communicate via ping. If not, resolve any firewall or

	Delivery Controller and the VDA	network issues. • Refer to the additional troubleshooting steps listed in Troubleshooting Virtual Desktop Agent Registration with Controllers in XenDesktop, as these are common problems that cause communication issues between the DDC and the VDA.
Contact Lost	The Controller lost connection with the VDA. This may likely be caused by network disruptions.	• Verify that the Citrix Broker service is running on the DDC and the Desktop Service is running on the VDA. Start each if stopped. • If already started, restart the Desktop Service on the VDA to restart the registration process and validate the VDA registers successfully. Confirm the DDCs configured for the VDA are accurate via the details in the Application event log. • Verify the DDC and VDA can successfully communicate via ping. If not, resolve any firewall or network routing issues.
Broker Registration Limit Reached	The DDC has reached the configured maximum number of VDA's that are allowed to concurrently register to it. By default, the DDC allows 10,000 concurrent VDA registrations.	• If this error is seen, consider adding Controllers to the site or creating a new site. • Increasing the number of VDAs allowed to concurrently register with the DDC via the HKLM\Software\Citrix\DesktopServer\MaxWorkers registry key is also possible. Please see here for more details. Note that increasing this number may require additional CPU and memory resources for the DDC server.
Empty Registration Request	The registration request sent from the VDA to the DDC was empty. This may be due to a corrupt VDA software installation.	
Invalid Registration Request	The VDA made a registration request to the broker, but the content of the registration request is corrupt or invalid.	

Missing Agent Version	When registering with the broker, the VDA reports its Citrix Broker Protocol version to the DDC. This failure reason appears if the VDA fails to communicate the Citrix Broker Protocol version.	
Missing Registration Capabilities	The VDA version not compatible with the Delivery Controller.	• Restart the Desktop Service on the VDA to restart the registration process and validate the VDA registers correctly via the Application event log. • Reinstall the VDA software if the issue is impacting all machines.
Functional Level too Low for Catalog	The machine catalog is set to a higher VDA version than the installed VDA version.	Verify whether the VDA's machine catalog functional level is lower than or equal to that of the VDA, and downgrade the machine catalog to be lower than or equal to that of the VDA if necessary.
Functional Level too Low for Delivery Group	The delivery group is set to a higher VDA version than the installed VDA version.	Verify whether the VDA's delivery group functional level is lower than or equal to that of the VDA, and downgrade the delivery group to be lower than or equal to that of the VDA if necessary.
Settings Creation Failure	The Broker failed to construct a set of settings and configurations to send to the VDA. As part of the hard registration process, the Broker gathers and sends settings and configurations to the VDA. If the Broker is unable to gather the data, hard registration fails and the VDA becomes deregistered.	Check the event logs on the Delivery Controller for any errors. Restart the Broker service if a specific issue is not evident in the logs. Once the Broker service is restarted, restart the Desktop Service on the affected VDA(s) and validate they successfully register.
Soft Registered	The VDA software has been installed and configured to point to the Delivery Controllers, but it is not yet fully configured. This is usually caused by the machine not being part of a	• Verify the VDA is part of a machine catalog and delivery group. Add to the appropriate catalog and group if not a member already. • In Studio, validate whether the machine is currently Registered or not and/or has an active session or not. If currently registered and (optionally) hosting a

	machine catalog and delivery group.	session, this error can be ignored. • If the machine is unregistered, restart the Desktop Service on the VDA to force re-registration and validate in the Application event log that the VDA successfully registers. Troubleshoot any errors.
Hard Registration Pending	The VDA is not yet fully set up for hosting sessions. The machine experienced issues while transitioning from a soft registered state to a hard registered state.	
Incompatible Version	The VDA cannot communicate with the Controller due to a mismatch in the Citrix protocol versions. This is due to incompatibility between the VDA and Controller versions.	Align the VDA and Controller versions.
Inconsistent Registration Capabilities	The VDA cannot communicate its capabilities with the Broker. This may be due to incompatibility between the VDA and Controller versions. The registration capabilities, which change with each version, are expressed in a form that does not match the registration request.	
Unsupported Credential Security Version	The VDA and DDC are not using the same encryption mechanism.	
Send Settings Failure	The Broker failed to send settings and configuration data to the VDA. As part of the hard registration process, the Broker gathers and sends settings and configurations to the VDA. If the Broker is able to gather the data, but is unable to send it, hard registration	• If limited to a single VDA, restart the Desktop Service on the VDA to force re-registration and validate the VDA registers successfully via the Application event log. Troubleshoot any errors seen. • If widespread, restart the Citrix Broker service on the Delivery Controller.

	fails and this failure reason results.	
Session Prepare Failure	The Broker failed to notify the VDA to prepare to host a session. When a user requests a connection to a VDA and the VDA is hard registered, the broker notifies the VDA to prepare to be contacted by a receiver instance. If the call fails, the VDA is forcibly deregistered, resulting in this failure.	
Session Audit Failure	The broker failed to complete an audit of the sessions that are running on the VDA.	

3.4.3 Server OS Machines Test

Server OS Machines are VMs or physical machines based on the Windows Server operating system used for delivering applications or hosted shared desktops to users.

This test auto-discovers the Server OS Machines in the site and reports the session load on, resource usage of, and current state of each machine. This way, administrators can quickly identify machines that are experiencing heavy load and those that are consuming resources abnormally.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each server OS machine running in the delivery controller site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	The IP address of the host for which the test is being configured.

Parameter	Description
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will not be able to monitor the site any longer**. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by Delivery Group	If you want the results of this test to be grouped by delivery group then set this flag to **Yes**. In this case therefore, the delivery groups containing the server OS machines will be the primary descriptors of this test; expanding them will reveal the secondary descriptors – i.e., the server OS machines in each delivery group. If you want the results of this test to be indexed only by the names of the server OS machines, then set this flag to **No**.

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

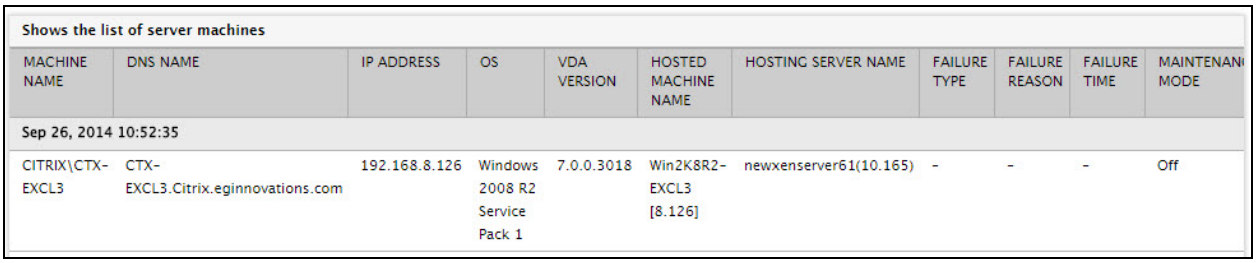
Measurement	Description	Measurement Unit	Interpretation
Power state	Indicates the current power state of this server OS machine.		The values this measure can report and their corresponding numeric values are listed in then table below: **Measure Value** / **Numeric Value** Unknown: 0 Unavailable: 1 Off: 2 On: 3 Suspended: 4 Turning on: 5 Turning Off: 6 Suspending: 7 Resuming: 8 Unmanaged: 9 Using the detailed diagnosis of the Power state measure you can view the complete configuration details of the server OS machine.

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>Note:
By default, this measure reports the Measure Values in the table above to indicate the power state of a server OS machine. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents only.</td></tr>
<tr><td>Maintenance mode</td><td>Indicates whether/not this machine is in the maintenance mode currently.</td><td></td><td>The values this measure can report and their corresponding numeric values are listed in then table below:
<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Off</td><td>0</td></tr><tr><td>On</td><td>1</td></tr></table>Note:
By default, this measure reports the Measure Values in the table above to indicate whether/not a server OS machine is in the maintenance mode. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents only.</td></tr>
<tr><td>Pending image update</td><td>Indicates whether/not image updates are pending on this machine.</td><td></td><td>The values this measure can report and their corresponding numeric values are listed in then table below:
<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>Note:
By default, this measure reports the Measure Values in the table above to</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>indicate whether/not image updates are pending on this server OS machine. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents only.</td></tr>
<tr><td>Is this physical machine?</td><td>Indicates whether this server OS machine is a physical or virtual machine.</td><td></td><td>The values this measure can report and their corresponding numeric values are listed in then table below:
<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>
Note:
By default, this measure reports the Measure Values in the table above to indicate whether/not a server OS machine is a physical machine. However, in the graph of this measure, the same will be represented using the corresponding numeric equivalents only.</td></tr>
<tr><td>Total sessions</td><td>Indicates the total number of user sessions on this server OS machine.</td><td>Number</td><td>This is a good indicator of the current session load on a server OS machine. Compare the value of this measure across machines to know which machine is overloaded with sessions.</td></tr>
<tr><td>Load evaluator index</td><td>Indicates the load evaluator index of this machine.</td><td>Percent</td><td>A server’s load index may be the aggregate of:
• Various computer performance counter based metrics, namely CPU, Memory and Disk Usage
• Session Count</td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
			It is designed to indicate how suitable a XenApp Worker is to receive a new user session. It is the Delivery Controller's responsibility to calculate the load index based on the aggregate of the normalized load rule indexes generated by the various load rules. As only the Delivery Controller can determine the session load, a server's overall load index is calculated on the Delivery Controller and not the Virtual Delivery Agent. By comparing the value of this measure across server OS machines, you can figure out whether or not load is uniformly balanced across all servers in the site.
CPU	Indicates the CPU load evaluator index of this server OS machine.	Percent	A high value is indicative of excessive CPU usage by the machine over time.
Memory	Indicates the memory load evaluator index of this server OS machine.	Percent	A high value is indicative of excessive memory usage by the machine over time.
Disk	Indicates the disk load evaluator index of this server OS machine.	Percent	A high value is indicative of excessive disk usage by the machine over time.
Session count	Indicates the session count load evaluator index of this server OS machine.	Percent	A high value indicates that the machine has been consistently handling many user sessions.

Using the detailed diagnosis of the *Power state* measure you can view the details of the server OS machine such as the IP address, DNS name, OS of the machine, the server hosting the machine, and the current status of that machine.



Shows the list of server machines

MACHINE NAME	DNS NAME	IP ADDRESS	OS	VDA VERSION	HOSTED MACHINE NAME	HOSTING SERVER NAME	FAILURE TYPE	FAILURE REASON	FAILURE TIME	MAINTENANCE MODE
Sep 26, 2014 10:52:35										
CITRIX\CTX-EXCL3	CTX-EXCL3.Citrix.eginnovations.com	192.168.8.126	Windows 2008 R2 Service Pack 1	7.0.0.3018	Win2K8R2-EXCL3 [8.126]	newxenserver61(10.165)	-	-	-	Off

Figure 3.12: The detailed diagnosis of the Power state measure

3.4.4 Machine Catalogs Test

In XenDesktop, collections of virtual machines (VMs) or physical computers of the same type are managed as a single entity called a catalog. To deliver desktops to users, the machine administrator creates a catalog of machines and the assignment administrator allocates machines from the catalog to users by creating delivery groups.

This test auto-discovers the catalogs managed by the XenDesktop site being monitored, and reports useful statistics related to each catalog, which reveal:

- The catalog type;
- The type of desktops allocated to each catalog;
- The availability, usage, and assignment of desktops in each catalog

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for every catalog on each controller configured within a site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the

Parameter	Description
	Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
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
Allocation type	Indicates the allocation type of the machines available in this catalog.	Number	This measure can report any one of the following values: • Static • Permanent • Random • Unknown The table below provides the numeric values that correspond to the allocation types listed above, and a brief description of each type:

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Allocation Type</th><th>Numeric Value</th><th>Description</th></tr>
<tr><td>Static</td><td>1</td><td>Indicates that the machines in this catalog are either assigned by the administrator or assigned on first use to users. This assignment will change only when the administrator explicitly changes the assignments.</td></tr>
<tr><td>Permanent</td><td>2</td><td>Indicates that the machines in this catalog are permanently assigned to the user.</td></tr>
<tr><td>Random</td><td>3</td><td>Indicates that the machines in this catalog are picked in random and are temporarily assigned to the user.</td></tr>
</table>
Note:
By default, this measure reports the Allocation Types listed in the table above. However, the graph of this measure will represent the allocation types using their corresponding numeric equivalents – i.e., 1 to 3.
The detailed diagnosis of this measure if enabled, lists the catalog to which the
</td></tr>
</table>

<table>
<tr><th>Measurement</th><th>Description</th><th>Measurement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>machine belongs, the zone to which the catalog belongs, the machine type, the number of sessions supported by the machine i.e, either Single session or Multi session, the location used for storing user data, the provisioning type and the scopes associated with the chosen catalog.</td></tr>
<tr><td>Are physical machines?</td><td>Indicates whether/not the machines in this catalog are power managed by the controller.</td><td></td><td>This measure reports a value Yes if the machines are power managed by the controller and No, if otherwise.

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

<table><tr><th>Measure Value</th><th>Numeric Value</th></tr><tr><td>Yes</td><td>1</td></tr><tr><td>No</td><td>0</td></tr></table>
Note:

By default, this measure reports whether the machines are power managed by the controller or not. However, the graph of this measure will be represented using their corresponding numeric equivalents – i.e., 0 or 1.</td></tr>
<tr><td>Entitled machines used in delivery groups</td><td>Indicates the number of assigned machines (to users) in this catalog that are within delivery groups.</td><td>Number</td><td></td></tr>
<tr><td>Entitled machines available for delivery groups</td><td>Indicates the number of machines in this catalog that are available to users within delivery groups.</td><td>Number</td><td></td></tr>
<tr><td>Machines not</td><td>Indicates the number of</td><td>Number</td><td></td></tr>
</table>

Measurement	Description	Measurement Unit	Interpretation
entitled available for delivery groups	machines within the delivery groups that are not yet assigned to users.		
Machines not entitled used in delivery groups	Indicates the number of unassigned machines in this catalog within the delivery groups but are still used in the pool.	Number	
Machines used in delivery groups	Indicates the number of machines in this catalog that are within delivery groups.	Number	
Total machines in catalog	Indicates the total number of machines in this catalog.	Number	

The detailed diagnosis of the *Allocation type* measure if enabled, lists the catalog to which the machine belongs, the zone to which the catalog belongs, the machine type, the number of sessions supported by the machine i.e, either Single session or Multi session, the location used for storing user data, the provisioning type and the scopes associated with the chosen catalog.

Shows the Machine Catalog details

CATALOG	DESCRIPTION	MACHINE TYPE	SESSION SUPPORT	USER DATA	PROVISIONING TYPE	PVS ADDRESS	PVS DOMAIN	SCOPES
Sep 26, 2014 10:49:23								
Sales-Desktop-Catalog	XenDesktop	Desktop OS Machines	Single Session	Personal vDisk	Machine Creation Services	-	-	-

Figure 3.13: The detailed diagnosis of the Allocation type measure

3.5 The Users Layer

Use the tests mapped to this layer to monitor user logons to the broker, assess user load, capture bottlenecks in the logon process, and detect user connection failures.

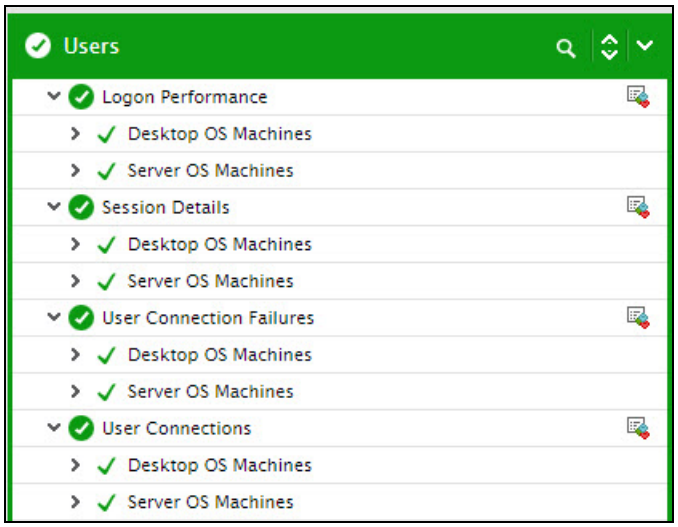


Figure 3.14: The tests mapped to the Users layer

3.5.1 Logon Performance by Delivery Groups Test

The process of a user logging into a desktop/server OS machine managed by a Citrix Delivery Controller is complex. First, the user's login credentials are authenticated. Then, the corresponding user profile is identified and loaded. Next, group policies are applied and logon scripts are processed to setup the user environment. Then, a HDX connection is established with the VM, subsequent to which, the VM starts and hands off keyboard and mouse control to the user. In the meantime, additional processing may take place for a user – say, applying system profiles, creating new printers for the user, and so on. A slowdown in any of these steps can significantly delay the logon process for a user and may adversely impact the logins for other users who may be trying to access desktops/applications at the same time. Hence, if a user complains that he/she is unable to access an application/desktop, administrators must be able to rapidly isolate exactly where the logon process is stalling and for which user.

The **Logon Performance by Delivery Groups** test tracks user connections to each delivery group configured in a site, measures the average time taken for users to access desktops/applications delivered by each group, isolates the group to which user logins are slow, and accurately pinpoints where the login process is bottlenecked. Detailed diagnostics provided by this test point to the precise user who is experiencing the slowness.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group configured in the Citrix XA/XD Site 7.x.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	Specify the IP address of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by Machine Type	If you want the results of this test to be grouped by machine type then set this flag to **Yes**. In this case therefore, the machine types (desktop or server OS machines) will be the primary descriptors of this test; expanding them will reveal the secondary descriptors – i.e., the delivery groups containing machines of each type. If you want the results of this test to be indexed only by the names of delivery groups, then set this flag to **No**.
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
Average logon duration	Indicates the average time taken for users to login to desktops/applications offered by this delivery group.	Secs	If this measure reports a high value consistently, it could indicate a slowdown in the logon process. You can use the detailed diagnosis of this measure to understand the logon experience of each user to the delivery group, identify that user who took the maximum time to login, and accurately isolate where he/she experienced slowness.
Logons	Indicates the number of users who recently logged into desktops/applications delivered by this delivery group.	Number	This is a good indicator of the current user load on a delivery group.
Brokering duration	Indicates time taken to complete the process of brokering sessions to this deliver group.	Secs	A high value indicates that brokering is taking a long time. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of

Measurement	Description	Measurement Unit	Interpretation
			the *Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Time taken for starting VM	Indicates the time taken for starting the machines in this delivery group.	Secs	A high value indicates that machines are taking too long to startup. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
HDX connection duration:	Indicates the time taken to	Secs	A high value indicates that HDX connections are taking time to be

Measurement	Description	Measurement Unit	Interpretation
	complete the steps required for setting up the HDX connection from the client to the machines in this delivery group.		established. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration measures* to know where exactly the user logon process slowed down - is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Authentication time	Indicates the time time taken to authenticate remoe sessions to the machines in this delivery group.	Secs	A high value indicates authentication delays. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?

Measurement	Description	Measurement Unit	Interpretation
GPOs duration	Indicates the time taken to apply group policy settings on the machines in this delivery group.	Secs	A high value indicates that GPO application is taking time. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Logon scripts duration	Indicates the time taken for logon scripts to be executed on the machines in this delivery group.	Secs	A high value indicates that logon script execution is taking time. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user

Measurement	Description	Measurement Unit	Interpretation
			profiles? Is it when starting the VM? Or is it when handing over control to the user?
Profile load time	Indicates the time taken by the logon process to load the profile of the users to this delivery group.	Secs	A high value indicates that profiles are taking too long to load. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Interactive session duration	Indicates the time taken by the logon process to handoff keyboard and mouse control to the users to this delivery group.	Secs	A high value indicates delays in handing off keyboard and mouse control to users. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, and Profile load time* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during

Measurement	Description	Measurement Unit	Interpretation
			brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?

3.5.2 Session Details Test

By tracking sessions to each delivery group configured on a site, administrators can not only assess the load on the delivery groups, but can also quickly identify problematic sessions – these could be sessions that are disconnected, sessions that are in an Unknown state, sessions that are reconnecting for some reason. This is what the **Session Details** test does! This test monitors the user sessions to each delivery group in a site, points administrators to overloaded groups, and also reports the status of sessions to each group, so that problem sessions can be isolated and their problems can be investigated.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group configured in the Citrix XA/XD Site 7.x.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed.
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will**

Parameter	Description
	not be able to monitor the site any longer. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by Machine Type	If you want the results of this test to be grouped by machine type then set this flag to **Yes**. In this case therefore, the machine types (desktop or server OS machines) will be the primary descriptors of this test; expanding them will reveal the secondary descriptors – i.e., the delivery groups containing machines of each type. If you want the results of this test to be indexed only by the names of delivery groups, then set this flag to **No**.
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
Active sessions	Indicates the number of user sessions that are currently active on this delivery group.	Number	This is a good indicator of the current session load on a delivery group. A consistent zero value however could indicate a connection issue. You can compare the value of this measure across delivery groups to kow which delivery group is handling the maximum number of sessions currently. To determine the details of the currently active sessions, use the detailed diagnosis of this measure.
Connected sessions	Indicates the number of sessions that are currently connected to this delivery group.	Number	Use the detailed diagnosis of this measure to view the details of connected sessions.
Disconnected sessions	Indicates the number of sessions that are currently disconnected from this delivery group.	Number	If all the current sessions suddenly log out, it indicates a problem condition that requires investigation. The detailed diagnosis of this measure lists the sessions that were logged out.

Measurement	Description	Measurement Unit	Interpretation
Reconnecting sessions	Indicates the number of sessions that are reconnecting with this delivery group soon after a disconnect.	Number	
Preparing sessions	Indicates the number of sessions to this delivery group that are currently in the Preparing state.	Number	
Non-brokered sessions	Indicates the number of user sessions that are not brokered by the machines managed by this delivery group.	Number	
Unknown sessions	Indicates the number of sessions to this delivery group that are currently in Unknown state.	Number	
Other sessions	Indicates the number of sessions to this delivery group that are currently in Other state.	Number	
Pending sessions	Indicates the number of sessions to this delivery group that are currently pending.	Number	

3.5.3 User Connection Failures

If a user complains that his/her connections to a desktop/application failed, then adinistrators must be able to quickly detect the failure and accurately zero-in on the reason for the failure, so that the problem can be fixed and the user connection can be restored. The **User Connection Failures** test helps administrators do just that! This test monitors the user connections to each delivery group in a site, promptly detects connection failures, and accurately indicates what caused the failure – is it due to a problem at the client side? is it owing to configuration errors? is it because of machine failures? is it due to the exhaustion of delivery group capacity? Or is it due to the absence of a license?

Target of the test : A Citrix XenDesktop Director

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group configured in the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will not be able to monitor the site any longer**. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.

Parameter	Description
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by Machine Type	If you want the results of this test to be grouped by machine type then set this flag to **Yes**. In this case therefore, the machine types (desktop or server OS machines) will be the primary descriptors of this test; expanding them will reveal the secondary descriptors – i.e., the delivery groups containing machines of each type. If you want the results of this test to be indexed only by the names of delivery groups, then set this flag to **No**.
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

Meas-urement	Description	Meas-urement Unit	Interpretation
Client connection failures	Indicates the number of connections to this delivery group that	Number	A high value for this measure is a cause for concern. In such situations, use the table below to understand the common causes for these failures:

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td>failed due to a problem at the client side.</td><td></td><td>
<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Connection timeout</td><td>The client did not connect to the VDA after the VDA was prepared for session launch. The session was successfully brokered, but a timeout occurred while waiting for the client to connect to the VDA. This could be caused by issues that prevent the client from effectively connecting to the VDA, such as firewall settings, network interruptions, or settings that prevent remote connections.</td></tr>
<tr><td>Ticketing</td><td>Failure occurred during ticketing, indicating that the client connection to the VDA does not match the brokered request. A launch request ticket is prepared by the broker and delivered in the ICA file. When the user attempts to launch a session, the VDA will validate the launch ticket in the ICA file with the broker. A failure can occur if ICA file corruption occurs or if a user is attempting to make an unauthorized connection.</td></tr>
<tr><td>Active Session Reconnect Disabled</td><td>The specific application or desktop session that the user attempted to launch is active and connected to a different endpoint. However, the user's current endpoint is unable to connect to the active session.</td></tr>
</table>

To know what action to take against each of the causes discussed above, use the table below:
<table>
<tr><th>Cause</th><th>Action</th></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>Connection timeout</td><td>• Check in the Director console to see if the client currently has an active connection, which means no user would be currently impacted.
• If no session exists, review the event logs on the client and VDA for any errors. Resolve any issues with network connectivity between the client and VDA</td></tr>
<tr><td>Ticketing</td><td>• Verify that the user should have access to the application or desktop based on the user groups defined in the delivery group(s).
• Instruct the user to attempt to re-launch the application or desktop to determine whether this is a one-off issue. If the issue recurs, review the client device event logs for errors.
• Verify that the VDA to which the user is attempting to connect is registered. If unregistered, review the event logs on the VDA and resolve any issues with registration.</td></tr>
<tr><td>Active Session Reconnect Disabled</td><td>On the controllers, verify that Active Session Reconnection is enabled via the DisableActiveSessionReconnect in the registry, by setting value to 0 under HKLM/Software/Citrix/Desktop/Server</td></tr>
</table>
</td></tr>
<tr><td>Configuration errors</td><td>Indicates the number</td><td>Number</td><td>A high value for this measure is a cause for concern. In such situations, use the table below to understand the common</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td>of connections to this delivery group that failed due to configuratio n errors.</td><td></td><td>causes for these errors:

<table><tr><th>Cause</th><th>Description</th></tr><tr><td>Application Disabled</td><td>The application has been disabled by the administrator and thus cannot be accessed by end users.</td></tr><tr><td>Maintenance Mode</td><td>The VDA, or the delivery group to which the VDA belongs, is set in maintenance mode.</td></tr><tr><td>Resource Unavailable</td><td>The application or desktop to which the user is attempting to connect is not available. This application or desktop may no longer exist, or there are no VDAs available to run it. This can be caused if the application or desktop has since been unpublished, or if the VDAs hosting the application or desktop have reached maximum load or are set in maintenance mode.</td></tr><tr><td>Disallowed Protocol</td><td>The ICA and/or RDP protocols are not allowed.</td></tr></table>
To know what action to take against each of the causes discussed above, use the table below:

<table><tr><th>Cause</th><th>Action</th></tr><tr><td>Application Disabled</td><td>Enable the relevant application and instruct the user to attempt to reconnect if the application is intended to be available for production use.</td></tr><tr><td>Maintenance Mode</td><td>Determine whether maintenance mode is required. Disable maintenance mode on the delivery group or machine in question</td></tr></table></td></tr>
</table>

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<table>
<tr><td></td><td>if it is not needed and instruct the user to attempt to reconnect.</td></tr>
<tr><td>Resource Unavailable</td><td>• Verify that the application or desktop is still published and that the VDAs are not in maintenance mode.
• Verify whether the server OS VDAs are at full load. Provision additional server OS VDAs if necessary.
• Verify whether there are desktop OS VDAs available for connections. Provision additional desktop OS VDAs if necessary.</td></tr>
<tr><td>Disallowed Protocol</td><td>• Run the Get-BrokerAccessPolicyRule PowerShell command on a Delivery Controller and validate that the “AllowedProtocols” value has all the desired protocols listed.
• This should only occur in case of a misconfiguration.</td></tr>
</table>
</td></tr>
<tr><td>Machine failures</td><td>Indicates the number of connections to this delivery group that failed due to machine failures.</td><td>Number</td><td>A high value for this measure is a cause for concern. In such situations, use the table below to understand the common causes for these failures:
<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Spin Up Failed</td><td>VDA could not be powered-on for session launch. This is a hypervisor-reported issue.</td></tr>
</table>
</td></tr>
</table>

Meas-urement	Description	Meas-urement Unit	Interpretation	
			No Session to Reconnect	The client attempted to reconnect to a specific session, but the session has been terminated.
			Registration Timeout	The VDA was powered on, but a timeout occurred while it was attempting to register with the Controllers.
			Communication Error	The Controller attempted to send information to the VDA, such as a request to prepare for a connection, but an error occurred in the communication attempt. This may be caused by network disruptions.
			Refused	The Controller sends a request to the VDA to prepare for a connection from an end user, but the VDA actively refuses this request.
			Session Preparation	Session prepare request from the Controller to the VDA failed. This may be caused by communication issues between the Controller and the VDA, issues experienced by the Broker service while creating a prepare request, or the VDA's inability to accept the request due to reasons such as network issues.
			Configuration Set Failure	The Controller failed to send required configuration data, such as policy settings and session information, to VDA during session launch. This may be caused by communication issues between the Controller and the VDA, issues experienced by the Broker service while creating a configuration set request, or the VDA's inability to

<table>
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<table>
<tr><td></td><td>accept the request due to reasons such as network issues.</td></tr>
<tr><td>Machine Not Functional</td><td>The VDA is not functional. Some causes of this failure include: the VDA was removed from the delivery group, the VDA is unregistered, the VDA power state is unavailable, or the VDA is experiencing internal issues.</td></tr>
</table>
To know what action to take against each of the causes discussed above, use the table below:
<table>
<tr><th>Cause</th><th>Action</th></tr>
<tr><td>Spin Up Failed</td><td>• Validate the machine is still powered off. Attempt to start the machine through Studio. Review hypervisor connectivity and permissions if this fails.
• If the VDA is a PVS-provisioned machine, verify the machine is up in the PVS console. If not, validate the machine is assigned a vDisk and log into hypervisor to reset the VM.</td></tr>
<tr><td>No Session to Reconnect</td><td>Retry the workspace control reconnection</td></tr>
<tr><td>Registration Timeout</td><td>• Verify that the Citrix Broker service is running on the DDC and the Desktop Service is running on the VDA. Start each if stopped.
• If already started, restart the</td></tr>
</table>
</td></tr>
</table>

<table>
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<table>
<tr><td></td><td rowspan="4">Desktop Service on the VDA to restart the registration process and validate the VDA registers successfully. Confirm the DDCs configured for the VDA are accurate via the details in the Application event log.
• Verify the DDC and VDA can successfully communicate via ping. If not, resolve any firewall or network routing issues.</td></tr>
<tr><td>Communication Error</td></tr>
<tr><td>Refused</td></tr>
<tr><td>Session Preparation</td></tr>
<tr><td>Configuration Set Failure</td><td></td></tr>
<tr><td>Machine Not Functional</td><td>• Verify that the VDA is in a delivery group. If not, add it to the appropriate delivery group.
• Verify that the VDA shows as powered on in the Studio console. If power state is Unknown for several machines, resolve any issues with connectivity to hypervisor or host failures.
• Verify that the hypervisor hosting the VDA is not in maintenance mode.
• Restart the VDA once the above items have been addressed.</td></tr>
</table>
</td></tr>
<tr><td>Unavailable capacity</td><td>Indicates the number of connections to this</td><td>Number</td><td>A high value for this measure is a cause for concern. In such situations, use the table below to understand the common causes for these failures:</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td>delivery group that failed because the configured capacity of the machines was consumed.</td><td></td><td>
<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Session Limit Reached</td><td>All VDAs are in use and there is no capacity to host additional sessions. This may occur if all VDAs are in use (for desktop OS VDAs), or all VDAs have reached the configured maximum concurrent sessions allowed (for server VDAs).</td></tr>
<tr><td>Max Concurrent Instances Exceeded</td><td>The maximum number of instances of an application has been reached. No additional instances of the application can be open on the VDA. This issue is generally related to the application limits feature.</td></tr>
<tr><td>Max Instances Per User Exceeded</td><td>The user is attempting to open more than one instance of an application, but the application is configured to allow only a single instance of the application per user. This issue is generally related to the applications limits feature.</td></tr>
</table>
To know what action to take against each of the causes discussed above, use the table below:
<table>
<tr><th>Cause</th><th>Action</th></tr>
<tr><td>Session Limit Reached</td><td>• Verify whether there are any VDAs in maintenance mode and disable maintenance mode if it is not needed to free up additional capacity.
• Consider increasing the Maximum Number of Sessions Citrix policy setting, which will</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td></td><td>allow more sessions per server VDA.
• Consider adding additional server OS VDAs.
• Consider adding more desktop OS VDAs.</td></tr>
<tr><td>Max Concurrent Instances Exceeded</td><td>Consider increasing Limit the number of instances running at the same time to application setting to a higher value if licensing permits.</td></tr>
<tr><td>Max Instances Per User Exceeded</td><td>Only one instance of the application is allowed per user by design. If multiple instances per user are required, consider de-selecting the Limit to one instance per user setting in order to allow users to open more than one instance of an application.</td></tr>
</table>
</td></tr>
<tr><td>Unavailable licenses</td><td>Indicates the number of connections to this delivery group that failed because of the absence of a license.</td><td>Number</td><td>A high value for this measure is a cause for concern. In such situations, use the table below to understand the common causes for these failures:
<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Licensing</td><td>The licensing request failed. This could be caused by issues such as insufficient number of licenses, or the license server has been down for more than 30 days.</td></tr>
<tr><td>License Feature Refused</td><td>The feature being used is not covered in the existing licenses.</td></tr>
</table>
To know what action to take against each of the causes discussed above, use the table below:</td></tr>
</table>

<table>
<tr><th>Meas-urement</th><th>Description</th><th>Meas-urement Unit</th><th>Interpretation</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Cause</th><th>Description</th></tr>
<tr><td>Licensing</td><td>• Determine whether the license server is online and reachable. Resolve any network connectivity issues to the license server and/or reboot the license server if it appears to be malfunctioning.
• Determine whether there are sufficient licenses in the environment and allocate more if necessary.</td></tr>
<tr><td>License Feature Refused</td><td>Contact a Citrix sales representative to verify the features that are covered by the existing XenApp/XenDesktop license edition and type.</td></tr>
</table>
</td></tr>
</table>

3.5.4 User Connections Test

This test reports the number of users who recently connected with the machines/applications in each delivery group configured in the site. Sudden spikes in user connections to a delivery group can thus be identified.

Target of the test : A Citrix XA/XD Site

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each delivery group configured in the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.

Parameter	Description
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will not be able to monitor the site any longer**. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By default, this flag is set to **Yes**.
Report by machine Type	If you want the results of this test to be grouped by machine type then set this flag to **Yes**. In this case therefore, the machine types (desktop or server OS machines) will be the primary descriptors of this test; expanding them will reveal the secondary descriptors – i.e., the delivery groups containing machines of each type. If you want the results of this test to be indexed only by the names of delivery groups, then set this flag to **No**.
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

Parameter	Description
	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
New connections	Indicates the number of new connections to this delivery group since the last measurement period.	Number	Use the detailed diagnosis of this measure to view the details of each new connection.

3.5.5 User Experience by Delivery Groups Test

A Delivery group is a collection of machines selected from one or more machine catalogs. The Delivery group specifies which users can use those machines, and the applications available to those users.

Since the users of a delivery group share the resources of all the machines in that group, excessive resource usage by a few users can impact the experience of other users of that group. If this is to be prevented, then administrators must make sure that the delivery groups are well-tuned and are able to handle the workload imposed by all the users of the group. To achieve this, administrators should be able to:

- Track the demand for resources on each group - i.e., the workload of each group;
- Measure the average resource consumption in each group in response to the demand;
- Detect latencies (if any) in communication with a delivery group;
- Assess the impact of the resource usage and latencies on the overall experience of the users of the group.

The User Experience by Delivery Groups test helps administrators achieve all of the above! This test auto-discovers the delivery groups configured in a XenDesktop site and for each delivery group, reports the following:

- What is the workload of each group, in terms of user sessions;
- On an average, how much CPU, memory, and bandwidth resources are consumed per group?
- What type of traffic to/from a delivery group is the most bandwidth-intensive?
- Are users experiencing any latencies when interacting with a delivery group?

Using these pointers, administrators will be able to accurately judge whether/not their delivery groups have adequate resources to handle their workload. Delivery groups that will potentially experience a resource crunch can also be quickly identified in the process. In addition, the test warns administrators of current/probable latencies in communication with a delivery group. This way, the test captures and reports any anomaly that can adversely impact the overall user experience with a delivery group, thus enabling administrators to take the appropriate pre-emptive action.

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each **delivery group** in the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Domain, Username and Password	To connect to a delivery controller in a site and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the Domain to which the target controller belongs and enter the credentials of a user who has the **Farm Administrator** rights in the

Parameter	Description
	Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Average CPU usage of user's sessions	Indicates the percentage of CPU time that is used on an average by all user sessions on all machines in this delivery group.	Percent	Compare the value of this measure across delivery groups to know which group is running out of CPU resources. A value close to 100% is a cause for concern, as it indicates that one/more users in a delivery group are consuming the group's CPU resources excessively.
Average handles used by user's sessions	Indicates the total number of handles being currently held by all processes of all the users accessing machinesin this delivery group.	Number	A consistent increase in the handle count over a period of time is indicative of malfunctioning of programs. Compare this value across delivery group to know which group has users using a lot of handles.
Total audio bandwidth input	Indicates the bandwidth used by users while transmitting sound/audio to machines in this delivery group.	Kbps	Comparing these values across users will reveal which delivery group is sending/receiving bandwidth-intensive sound/audio files over the ICA channel. To minimize bandwidth consumption, you may want to consider disabling client audio mapping.
Total audio bandwidth output	Indicates the bandwidth used by users while receiving sound/audio from the machines in this delivery group.	Kbps	
Total input bandwidth	Indicates the average bandwidth used for client to server communications for all the user sessions on	Kbps	

Measurement	Description	Measurement Unit	Interpretation
	this delivery group.		
Total output bandwidth	Indicates the average bandwidth used for server to client communications for all the user sessions on this delivery group.	Kbps	
Total COM bandwidth input	Indicates the bandwidth used when sending data to the COM ports in this delivery group.	Kbps	Comparing these values across users will reveal which delivery group's COM ports are sending/receiving bandwidth-intensive data over the ICA channel.
Total COM bandwidth output	Indicates the bandwidth used when receiving data from the COM ports in this delivery group.	Kbps	
Total input compression	Indicates the average compression ratio for client to server traffic for all the sessions on this delivery group.	Number	
Total output compression	Indicates the average compression ratio for server to client traffic for all the sessions on this delivery group.	Number	
Total drive bandwidth input	Indicates the bandwidth used when users perform file operations on the mapped drives on the machines in this delivery group.	Kbps	Comparing the values of these measures across delivery groups will reveal which delivery group's users are performing bandwidth-intensive file operations over the ICA channel. If bandwidth consumption is too high, you may want to consider disabling client drive mapping on the client device. Client drive mapping allows users logged on to a virtual desktop from a client device to access their local drives transparently from the ICA

Measurement	Description	Measurement Unit	Interpretation
Total drive bandwidth output	Indicates the bandwidth used when machines in this delivery group perform file operations on the client's drive.	Kbps	session. Alternatively, you can conserve bandwidth by even refraining from accessing large files with client drive mapping over the ICA connection.
Total HDX media stream for flash data bandwidth input	Indicates the bandwidth by flash data traffic to this delivery group.	Kbps	Comparing the values of these measures across delivery groups will reveal which delivery group has been transmitting/receiving bandwidth-intensive flash data.
Total HDX media stream for flash data bandwidth output	Indicates the bandwidth used by flash data traffic from this delivery group.	Kbps	
Total PN bandwidth input	Indicates the bandwidth used when users obtain application set details by the Program Neighbourhood of the machines in this delivery group.	Kbps	Comparing the values of these measures across delivery groups to reveal which delivery group has been transmitting/receiving bandwidth-intensive PN traffic.
Total PN bandwidth output	Indicates the bandwidth used from this delivery group by Program Neighborhood to obtain application set details.	Kbps	
Average I/O reads for user's sessions	Indicates the rate of I/O reads done by all processes being run by the users of this delivery group.	Kbps	These metrics measure the collective I/O activity (which includes file, network and device I/O's) generated by all the processes being executed on a delivery group.
Average I/O writes for user's sessions	Indicates the rate of I/O writes done by all processes run by the users of this delivery group.	Kbps	Comparison across delivery groups helps identify the group which is running the most I/O-intensive processes.
Average screen refresh latency	Indicates the average client latency for a user.	Secs	

Measurement	Description	Measurement Unit	Interpretation
	The value reported is the average of the latencies for all the users of this delivery group.		
Average screen refresh latency - deviation	The latency deviation represents the difference between the minimum and maximum measured latency values for a session. The value reported is the average of the latency deviations for all the user sessions currently active on this delivery group.	Secs	Ideally, the deviation in latencies over a session should be minimum so as to provide a consistent experience for the user.
Average screen refresh latency - last	Represents the average client latency for the last request from a user to this delivery group. The latency is measured based on packets sent to and from each client during a session - this includes network delay plus server side processing delays. The value reported is the average of the last latencies for all the user sessions currently active on this delivery group.	Secs	A consistently high latency may be indicative of performance degradations with the machines in a delivery group. Possible reasons for an increase in latency could be increased network delays, network congestion, machine slow-down, too many simultaneous users on the machines etc. Typically, latencies will be below 5 secs.
Average memory usage for user's sessions	This value represents the ratio of the resident set size of the memory utilized by a user to the physical memory of the host system, expressed as a percentage. The value reported is the sum of all	Percent	This value indicates the percentage of memory resources that are used up by users of a delivery group. By comparing this value across delivery groups, an administrator can identify the delivery groups that are rapidly running out of physical memory resources.

Measurement	Description	Measurement Unit	Interpretation
	memory utilizations across all user sessions on this delivery group.		
Total user sessions	Indicates the current number of user sessions on this delivery group.	Number	A value of 0 indicates that no users are currently connected to the delivery group.
Total input line speed	Indicates the average line speed from the client for all the user sessions on this delivery group.	Kbps	
Total output line speed	Indicates the average line speed to the client for all the user sessions on this delivery group.	Kbps	
Total printer bandwidth input	Indicates the bandwidth used when users of this delivery group print to a desktop printer over the ICA channel.	Kbps	Comparing the values of these measures across delivery groups will reveal which group is issuing bandwidth-intensive print commands over the ICA channel. If bandwidth consumption is too high, you may want to consider disabling printing. Alternatively, you can avoid printing large documents over the ICA connection.
Total printer bandwidth output	Indicates the bandwidth used when the machines in this delivery group respond to print jobs issued by users.	Kbps	
Total speed screen data channel bandwidth input	Indicates the bandwidth used by data channel traffic to this delivery group.	Kbps	Comparing the values of these measures across delivery groups will reveal which group has been transmitting/receiving bandwidth-intensive data channel traffic.
Total speed screen data channel bandwidth output	Indicates the bandwidth used by data channel traffic from this delivery group.	Kbps	
Total HDX media stream for flash v2 data bandwidth input	Indicates the bandwidth used by flash v2 data traffic to this delivery group.	Kbps	Comparing the values of these measures across delivery groups will reveal which group has been transmitting/receiving bandwidth-

Measurement	Description	Measurement Unit	Interpretation
			intensive flash v2 data.
Total HDX media stream for flash v2 data bandwidth output	Indicates the bandwidth used by flash v2 data traffic from this delivery group.	Kbps	
Average page faults for user's sessions	Indicates the rate of page faults seen by all processes being run the user sessions on this delivery group.	Faults/Sec	Page Faults occur in the threads executing in a process. A page fault occurs when a thread refers to a virtual memory page that is not in its working set in main memory. If the page is on the standby list and hence already in main memory, or if the page is in use by another process with whom the page is shared, then the page fault will not cause the page to be fetched from disk. Excessive page faults could result in decreased performance. Compare values across delivery groups to figure out which delivery groups are causing most page faults.
Average virtual memory of user's sessions	Indicates the total virtual memory being used by all processes being run by the users of machines in this delivery group.	MB	Comparison across delivery groups reveals the delivery groups that are running out of virtual memory.
Average CPU time used by user's sessions	Indicates the percentage of time, across all processors, users of this delivery group hogged the CPU.	Percent	The *Average CPU usage of user's sessions* measure averages out the total CPU usage of a delivery group on the basis of the number of processors. For instance, if the machines in a delivery group are using a total of 8 CPU cores and the total CPU usage across all user sessions on that delivery group amounts to 80%, then the value of the *Average CPU usage of user's sessions* measure for that delivery group will be 10 % (80/8

Measurement	Description	Measurement Unit	Interpretation
			processors = 10). This accurately denotes the extent of CPU usage in an environment where load is uniformly balanced across multiple processors. However, in environments where load is not well-balanced, the *Average CPU usage of user's sessions* measure may not be an accurate indicator of CPU usage per user. For instance, if a single processor is used nearly 80% of the time, and other 7 processors in the 8-core processor environment are idle, the Average CPU usage of user's sessions measure will still report CPU usage as 10%. This may cause administrators to miss out on the fact that a particular processor is being over-utilized! In such environments therefore, its best to use the this measure! By reporting the total CPU usage of a delivery group across all user sessions and across all the processors the machines in that delivery group support, this measure serves as the true indicator of the level of CPU usage by a delivery group in dynamic environments. For instance, in the example above, the *Average CPU time used by user's sessions* of a delivery groupn will be 80% (and not 10%, as in the case of the CPU usage for user's processes measure). A high value or a consistent increase in the value of this measure is hence serious and demands immediate attention. In such situations, use the detailed diagnosis of the *Average CPU usage user's sessions* measure to know what CPU-intensive activities are being performed by the user.

Measurement	Description	Measurement Unit	Interpretation
Average output bandwidth usage	Indicates the percentage bandwidth consumption of HDX traffic from this delivery group.	Percent	Compare the value of this measure across delivery groups to know which delivery group is consuming the maximum bandwidth when handling HDX traffic.
Average input bandwidth usage for user's sessions	Indicates the percentage bandwidth consumed by HDX traffic to this delivery group.	Percent	
Total thinWire bandwidth input	Indicates the bandwidth used by ThinWire traffic to this delivery group.	Kbps	Typically, ICA traffic is comprised of many small packets, as well as a some large packets. Large packets are commonly generated for initial session screen paints and printing jobs, whereas the ongoing user session is principally comprised of many small packets. For the most part, these small packets are the highest priority ICA data called Thinwire. Thinwire incorporates mouse movements and keystrokes. Compare the value of these measures across delivery groups to know which delivery group's thinwire traffic is generating bandwidth-intensive traffic.
Total thinWire bandwidth output	Indicates the bandwidth used by ThinWire traffic from this delivery group.	Kbps	
Total seamless bandwidth input	Indicates the bandwidth used from client to this delivery group for published applications that are not embedded in a session window.	Kbps	Compare the value of these measures acrossdelivery groups to know which delivery group is accessing bandwidth-intensive applications that are not in a session window.
Total seamless bandwidth output:	Indicates the bandwidth used from this delivery group to client for published applications that are not embedded in a session window.	Kbps	
Total speed screen	Indicates the bandwidth	Kbps	Comparing the values of these

Measurement	Description	Measurement Unit	Interpretation
multimedia acceleration bandwidth input	used by multimedia traffic to this delivery group.		measures across delivery groups will reveal which delivery group has been transmitting/receiving bandwidth-intensive multimedia traffic.
Total speed screen multimedia acceleration bandwidth output	Indicates the bandwidth used by multimedia traffic from this delivery group.	Kbps	
Average frame rate for user's sessions	Indicates the rate at which the frames are transmitted from the machines in this delivery group to the client.	Frames/sec	This measure should be maintained in a permissible range. A sudden rise or fall of this measure could be a cause of concern.
Total resource shares	Indicates the total number of resource shares used by the users of this delivery group.	Number	By comparing the value of this measure across delivery groups, you can identify the delivery group that is hogging the resources.
Average framehawk frame rate for user's sessions	Indicates the rate at which frames are processed by the Framehawk virtual channel, if it is enabled for the user sessions on this delivery group.	Frames/sec	The Framehawk virtual channel optimizes the delivery of virtual desktops and applications to users on broadband wireless connections, when high packet loss or congestion occurs. **Note:** This measure will report the value 0 if Framehawk is not enabled for the user sessions on this delivery group or if the device from which the user is accessing the application does not support Framehawk.
Average framehawk network bandwidth for user's sessions	Indicates the bandwidth consumption of the user sessions on this delivery group when the Framehawk virtual delivery channel is used.	Kbps	This is a good measure of the effectiveness of Framehawk in optimizing the bandwidth usage over the virtual delivery channel. A low value is desired for this measure. **Note:** This measure will report the value 0 if Framehawk is not enabled for any user of the delivery group or if the device

Measurement	Description	Measurement Unit	Interpretation
			from which the user is accessing the delivery group does not support Framehawk.
Average framehawk latency for user's sessions	Indicates the latency experienced by the user sessions on this delivery group when the Framehawk virtual delivery channel is used.	Secs	This measure will report the value 0 if Framehawk is not enabled for any user of the delivery group or if the device from which the user is accessing the delivery group does not support Framehawk.
Average framehawk network loss	Indicates the percentage of packet loss experienced by the user sessions on this delivery group when the Framehawk virtual delivery channel is used.	Percent	This measure will report the value 0 if Framehawk is not enabled for any user of the delivery group or if the device from which the user is accessing the delivery group does not support Framehawk.
Average client network latency for user's sessions	Indicates the latency experienced by the user sessions on this delivery group when transmitting/receiving data over the ICA channel.	Secs	A low value is a sign of the good health of the ICA channel.

3.5.6 User Logon Performance Test

The **Logon Performance** test monitors the user logon process from a delivery group perspective; in other words, it monitors user logins to the desktops/applications in a delivery group, measures the 'aggregate' duration of the login across all users to that group, and thus points to bottlenecks in the user logon process to that group.

The **User Logon Performance** test on the other hand, provides the user-perspective to logon monitoring. In other words, this test tracks each user who logs into a desktop or accesses an application via the controller, reports in real-time the logon experience of that user, and pinpoints where exactly that user's logon slowed down. When a user complaints of delays in accessing his/her virtual desktop, this test will lead administrators straight to what is causing the delay. Detailed diagnositics provided by this test reveal which machines/applications a user is accessing and which delivery group these machines/applications belong to.

Target of the test : A controller in a Citrix XA/XD Site 7.x

Agent deploying the test : An internal agent

Outputs of the test : One set of results for each user to the controller in the site.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The IP address of the host for which the test is being configured.
Port	The port number at which the specified Host listens to. By default, this is 80.
Controller IP Address	To monitor a site and pull metrics on its performance, the eG agent communicates with a delivery controller in that site. If the target site contains only one controller, then, you need to configure the Controller IP Address parameter with the IP address of that controller, so that the eG agent can use that controller for monitoring the site. **Note that in this case, if the controller stops functioning for any reason, the eG agent will not be able to monitor the site any longer**. Some sites may be configured with multiple delivery controllers to ensure high-availability, and to optimize and load-balance user connections. When monitoring such a site, you have the option of configuring the Controller IP Address parameter with a comma-separated list of controllers. For instance, the list should be in the following format: *192.160.1.10,198.160.1.11,198.160.1.12*. In this case, the eG agent checks the availability of each configured controller at run time, picks the controller that is up and running at that time, and communicates with that controller for collecting metrics on site performance. This way, you can ensure that the non-availability of a single controller, does not impact site monitoring.
Controller Port	Specify the port number of the delivery controller in the site with which the eG agent should communicate for collecting performance metrics.
Username and Password	To connect to a delivery controller and pull out metrics from it, the eG agent requires **Farm Administrator** rights. In order to configure the eG agent with **Farm Administrator** privileges, specify the credentials of the **Farm Administrator** in the Username and Password text boxes. This user should also be assigned the **Allow log on locally** privilege on the Citrix XA/XD Site 7.x host. The steps for assigning the **Allow log on locally** privilege are explained in the Section **Chapter 3**.
Confirm Password	Confirm the Password by retyping it here.
Fully Qualified Domain Name	Here, specify the fully-qualified name of the domain to which the specified controller belongs.
SSL	Indicate whether/not the controller used for metrics collection is SSL-enabled. By

Parameter	Description
	default, this flag is set to **Yes**.
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
Average logon duration	Indicates the average time taken for this user to login to desktops/access applications.	Secs	If this measure reports a high value consistently, it could indicate a slowdown in the logon process. Compare the value of this measure across users to know which user's logon is taking the longest.
Logons	Indicates the number of times this user has logged in since the last measurement period	Number	
Brokering duration	Indicates time taken by this user to complete the process of brokering	Secs	A high value indicates that brokering is taking a long time.

Measurement	Description	Measurement Unit	Interpretation
	sessions.		If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Time taken for starting VM	Indicates the time taken by the controller to start the machines accessed by this user.	Secs	A high value indicates that machines are taking too long to startup. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to

Measurement	Description	Measurement Unit	Interpretation
			the user?
HDX connection duration	Indicates the time taken by the controller to complete the steps required for setting up the HDX connection from this user to the machines accessed by the user.	Secs	A high value indicates that HDX connections are taking time to be established. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, Authentication time, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Authentication time	Indicates the time taken by the controller to authenticate this user's sessions.	Secs	A high value indicates authentication delays. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, GPOs duration, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts

Measurement	Description	Measurement Unit	Interpretation
			execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
GPOs duration	Indicates the time taken to apply group policy settings on the machines accessed by this user.	Secs	A high value indicates that GPO application is taking time. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, Logon scripts duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Logon scripts duration	Indicates the time taken for logon scripts to be executed on the machines accessed by this user.	Secs	A high value indicates that logon script execution is taking time. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Profile load time, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the

Measurement	Description	Measurement Unit	Interpretation
			HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Profile load time	Indicates the time taken by the logon process to load the profile of this user.	Secs	A high value indicates that profiles are taking too long to load. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, and Interactive session duration* measures to know where exactly the user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Interactive session duration	Indicates the time taken by the logon process to handoff keyboard and mouse control to this user.	Secs	A high value indicates delays in handing off keyboard and mouse control to users. If the *Average logon duration* is very high, you may want to compare the value of this measure with that of the *Brokering duration, Time taken for starting VM, HDX connection duration, Authentication time, GPOs duration, Logon scripts duration, and Profile load time* measures to know where exactly the

Measurement	Description	Measurement Unit	Interpretation
			user logon process slowed down – is it during authentication? Is it during brokering? Is it when establishing the HDX connection? Is it when applying GPOs? Is it during logon scripts execution? Is it while loading user profiles? Is it when starting the VM? Or is it when handing over control to the user?
Pre-user initialization duration	Indicates the time overlaps with Group Policy Objects and logon scripts (configured through GPO).	Seconds	If the value of this measure is high, administrators should consider optimizing the Group Policy Objects and logon scripts configured through GPO.
User initialization duration	Indicates the time taken for executing *userinit.exe* for this user.	Seconds	When a user logs on to a Windows machine, Winlogon runs *userinit.exe* which runs logon scripts, re-establishes network connections, and then starts Explorer.exe, and the Windows user interface. If Average logon duration is abnormally high, then compare the value of this measure with the other time measurements to determine whether/not the logon delay can be attributed to slowness in the completion of user initialization tasks. A high value of this measure could indicate that the machine is not able to reach domain controller a network issue or a large number of logon scripts (corrupt) are configured through active directory user object. To resolve the issue, the administrators should immediately initiate the investigation before it causes serious impact on the logon process.

Measurement	Description	Measurement Unit	Interpretation
Shell duration	Indicates the duration between the initialization of the user interface to the time the user receives keyboard and mouse control.	Seconds	A high value of this measure could indicate that the VDA is heavily loaded with numerous applications running or if desktop has too many icons, etc.
Delay duration	Indicates the cumulative time delay between the Pre-userinit and Userinit phases.	Seconds	

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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