

Proactive Performance Monitoring for Citrix XenApp & XenDesktop

“Visibility into virtual desktop environments for a consistent user experience”



Because of Goliath’s status as a Citrix Ready partner, our mutual customers can be assured that the proactive monitoring capabilities in Goliath Performance Monitor complement the management and monitoring tools in XenDesktop and XenApp, allowing IT to have visibility into virtual desktop environments for a consistent user experience.

Greg Fox
Director, Citrix Ready

www.goliathtechnologies.com

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Proactive Performance Monitoring for Citrix XenApp & XenDesktop

Goliath Performance Monitor is the only IT performance monitoring solution that brings together Citrix XenApp & XenDesktop data and metrics from the underlying delivery infrastructure in a single console.

Goliath Performance Monitor is preconfigured to proactively find and monitor common Citrix XenApp & XenDesktop, Infrastructure, and Role Server failure points. This allows you to proactively anticipate, troubleshoot, resolve, and prevent performance issues in the most complex Citrix XenApp and XenDesktop environments.

Real-Time Citrix Performance Graphs & Dashboards



Real-Time XenApp & XenDesktop Session Display

Configure | Monitor | **View** | Report | Log Management

Performance Graphs | SNMP Traps | Registry | XenApp/XenDesktop Sessions

View > XenApp/XenDesktop Sessions

App Servers | Published Apps & Desktops | Virtual Desktops

XA Server Name	Session	State	UserAccount	Client Name	Client Address	Version	Logon	ICA Latency	Avg. ICA Latency	App Name
SVR-XAOPS002	HDX - Application	LoggedOff	Todd Matzelle	SVR-ADMIN01	10.20.200.50	14.4.1000.16	209.7 secs.	3 ms.	3.2 ms.	
SVR-XA76WIN1202	HDX - Application	LoggedOff	Mike McLeod	VDI-PERF004	10.20.100.63	14.4.0.8014	99.8 secs.	2 ms.	12.5 ms.	SAP
SVR-XAOPS001	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	86.3 secs.	3 ms.	3.0 ms.	Infrastructure Tools/VMware vSphere Client
SVR-XAOPS001	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	86.3 secs.	3 ms.	2.0 ms.	Infrastructure Tools/VMware vSphere Client
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	50.9 secs.	3 ms.	1.5 ms.	Word 2016
SVR-XAOPS001	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	46.7 secs.	3 ms.	3.1 ms.	Infrastructure Tools/VMware vSphere Client
SVR-XAOPS002	HDX - Application	LoggedOff	Amir Rajesh	SVR-ADMIN01	10.20.200.50	14.4.1000.16	46.2 secs.	5 ms.	1.7 ms.	
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	46.2 secs.	24 ms.	8.0 ms.	Infrastructure Tools/VMware vSphere Client, Monitoring/ControlUp
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	46.2 secs.	2 ms.	0.1 ms.	Goliath TechOps/Amazon AWS
SVR-XAOPS002	HDX - Application	LoggedOff	Amir Rajesh	LT-RAJA	10.10.100.76	14.4.1000.16	46.2 secs.	24 ms.	8.0 ms.	Infrastructure Tools/VMware vSphere Client, Monitoring/Citrix, NMAS, Monitoring/ControlUp
SVR-XAOPS002	HDX - Application	LoggedOff	Todd Matzelle	LT-TMATZELLE	10.10.100.70	14.4.1000.16	46.2 secs.	24 ms.	8.0 ms.	Monitoring/ControlUp
SVR-XAOPS003	HDX - Application	LoggedOff	Mike McLeod	GOLIATH-DEV01	192.168.1.165	14.4.1000.16	45.3 secs.	17 ms.	15.9 ms.	Goliath TechOps/GPM - Demo, Remote Desktop Connection
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	45.2 secs.	8 ms.	4.0 ms.	Infrastructure Tools/VMware vSphere Client
SVR-XA76WIN1202	HDX - Application	LoggedOff	LOSTEST01	GLS-EP01	10.20.100.225	14.3.0.5014	45 secs.	0 ms.	0.0 ms.	SAP
SVR-XA76WIN1201	HDX - Application	LoggedOff	LOSTEST03	GLS-EP03	10.20.180.21	14.3.0.5014	44.8 secs.	0 ms.	0.0 ms.	Microsoft Powerpoint 2013
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	42.1 secs.	6 ms.	1.6 ms.	Goliath TechOps/GPM - Demo, LINOPad 5, Word 2016
SVR-XAOPS002	HDX - Application	LoggedOff	Stacy Anderson	VDI-PERF001	10.20.100.16	14.4.0.8014	40.8 secs.	1 ms.	1.5 ms.	Word 2016

Key session metrics

Click to drill into a user's session

Toggle between environments

Troubleshoot real or simulated end user sessions historically or in real-time

Real-Time Connection Performance Drill Down From Session Display

Connection Performance | Logon Duration | ICA/HDX Channel | vGPU Performance | Server Performance | Application Performance | Session Properties

Session Performance Metrics for Session: 'console'

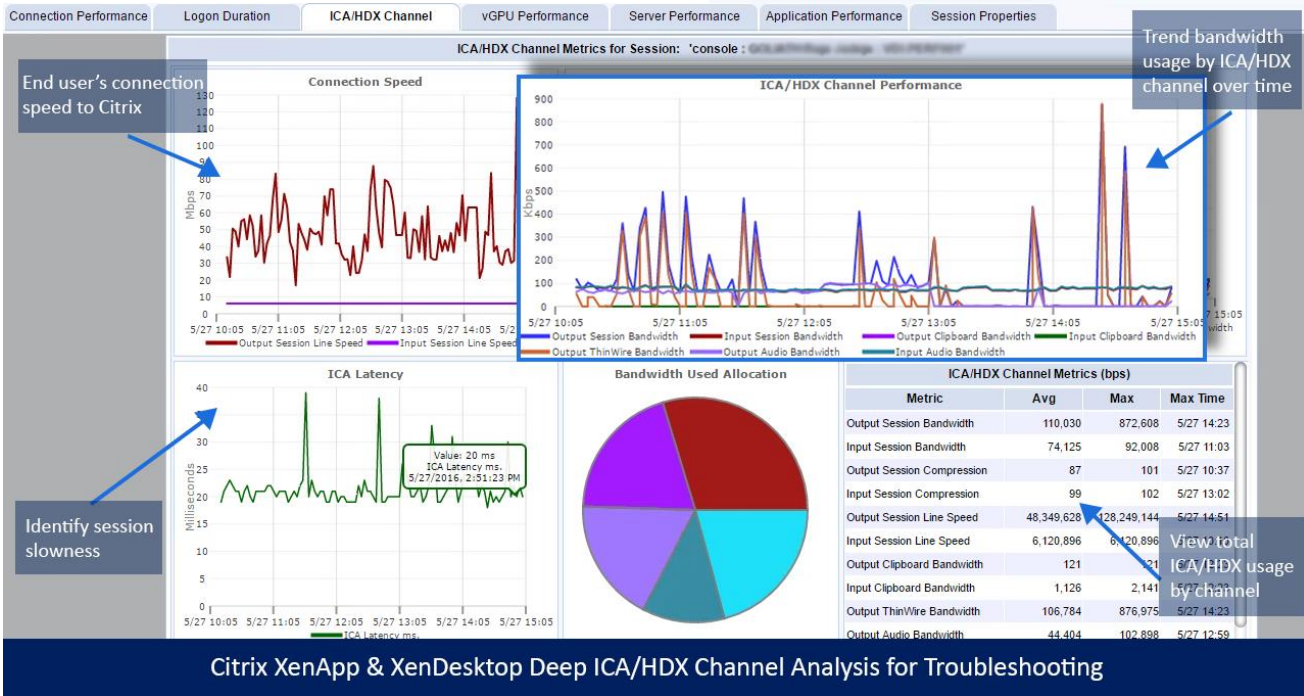
Track session slowness

Identify when network latency is causing ICA/HDX latency by correlating the two metrics

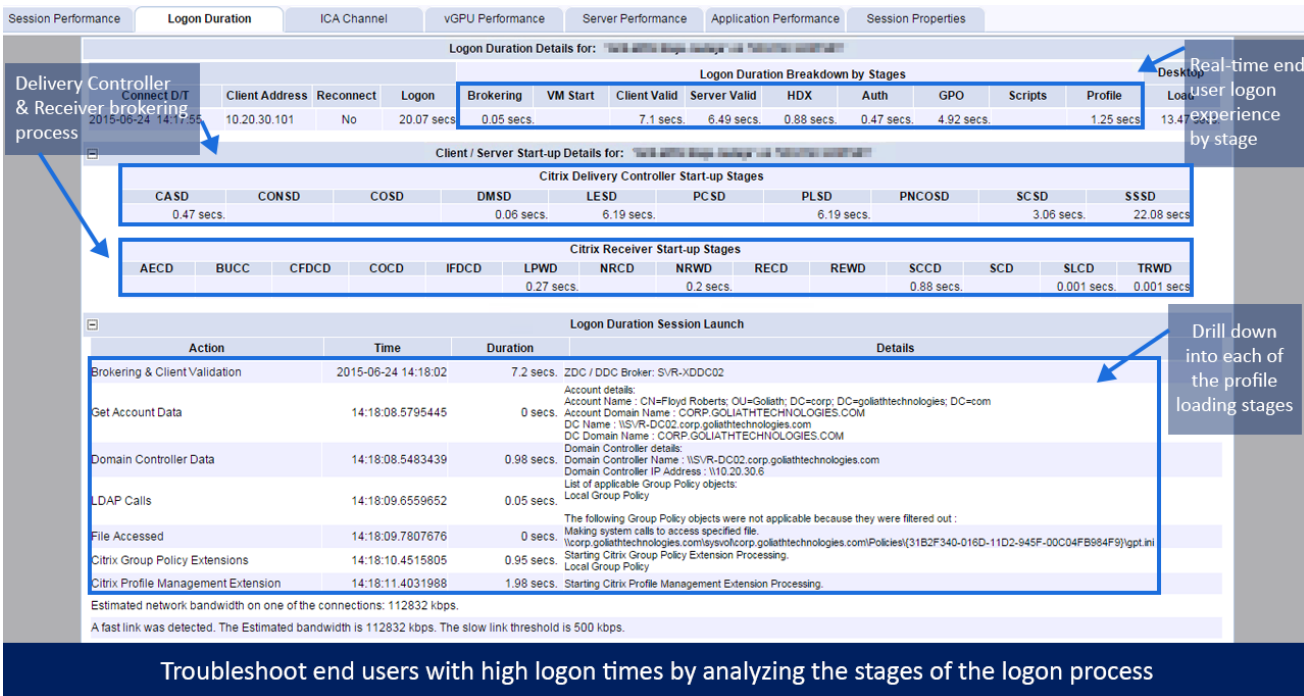
View the end user's connection speed for Citrix

Correlate the end users ICA/HDX latency with ICA RTT, connection bandwidth and network latency

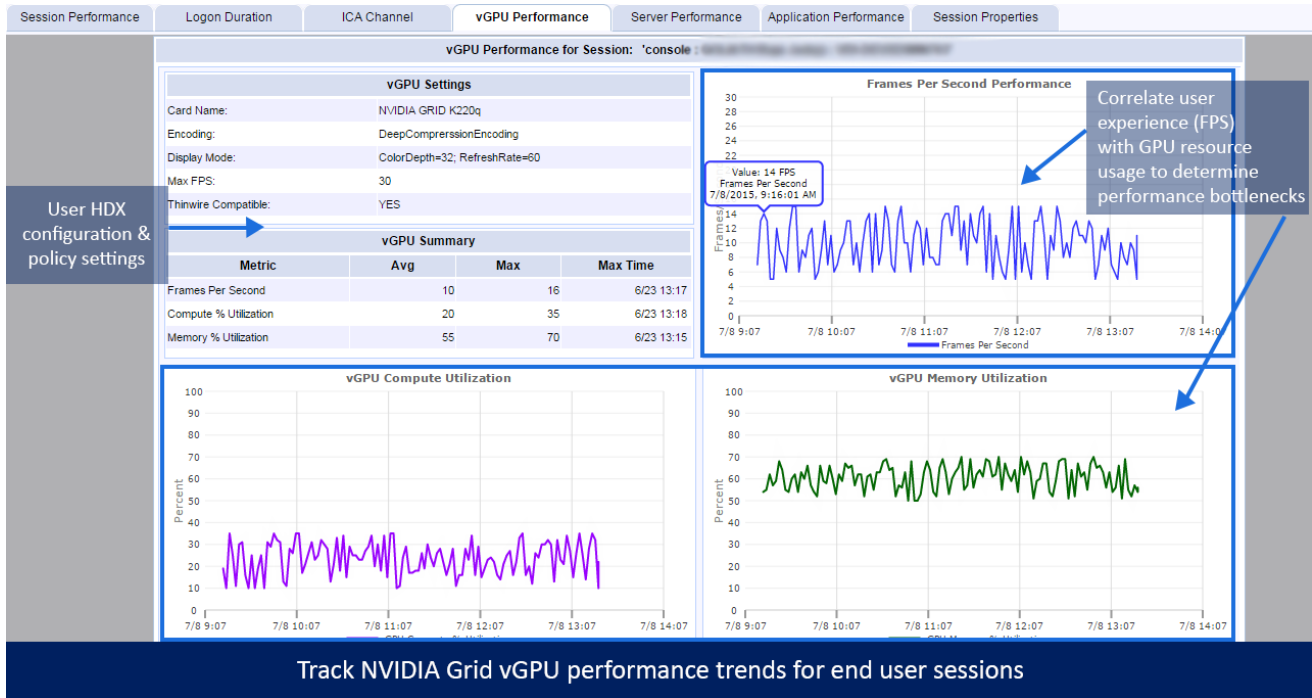
Real-Time ICA Channel Drill Down From Session Display



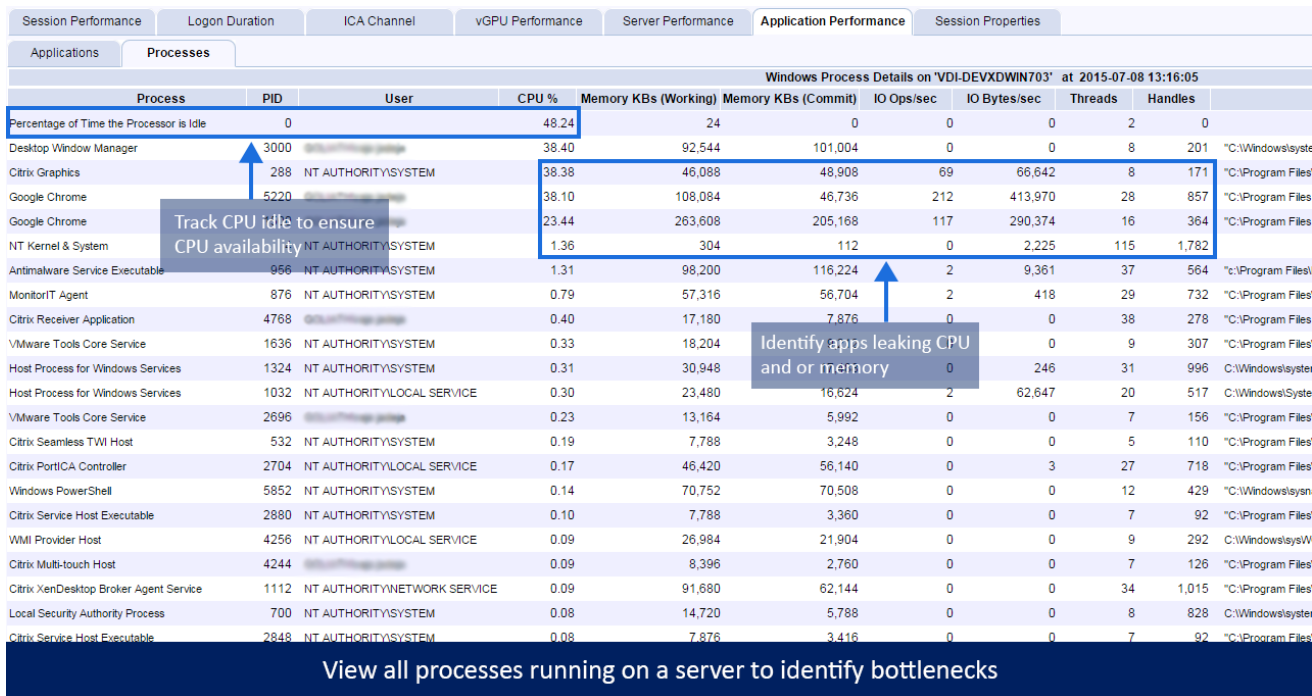
Real-Time Session Logon Duration Drill Down From Session Display



Real-Time NVIDIA vGPU Performance Drill Down From Session Display



Real-Time Application Performance Drill Down From Session Display



Real-Time User Session Properties Drill Down From Session Display

The screenshot shows the 'Session Properties' tab for a specific session. The interface is divided into two main sections: 'Machine Properties for VDI-DEVXWIN702' and 'Additional session details'.

Machine Properties for VDI-DEVXWIN702:

- AgentVersion: 7.6.0.5026
- AllocationType: Static
- ApplicationsInUse: {}
- AssociatedUserFullNames: {}
- AssociatedUserNames: {}
- AssociatedUserSIDs: {S-1-5-21-4018078286-1562769560-2405942992-1105}
- AssociatedUserUPNs: {}
- BrowserName: Windows 7 - MCS SA3-3-3D3D3847-0001
- Capabilities: {CBP1_S, PvdProgress, LeasedConnection}
- CatalogName: Development - WIN7 Desktops
- CatalogUUID: ab2bd35a-1145-4947-8ee8-ef6223f1e9d
- CatalogUid: 4
- ControllerDNSName: SVR-XDDC02
- DNSName: VDI-DEVXWIN702
- DeliveryType: DesktopsOnly
- DesktopConditions: {}
- DesktopGroupName: Development - Windows 7
- DesktopGroupUUID: 54ff1c81-30fb-4ac8-8540-824dc713e309
- DesktopGroupUid: 3
- DesktopKind: Private
- DesktopUid: 5
- FaultState: None
- FunctionalLevel: L7_6
- HostedMachineId: 4207e351-e290-76f8-3075-0d64777a3eb
- HostedMachineName: VDI-DEVXWIN702
- HostingServerName: 10.20.20.60
- HypervisorConnectionId: 06103ba6-c016-4317-b593-5bf6e0b5d6d
- HypervisorConnectionName: Citrix Cluster
- HypervisorConnectionUid: 2

Additional session details:

- IPAddress: 10.20.100.18
- ImageOutOfDate: False
- InMaintenanceMode: False
- IsAssigned: True
- IsPhysical: False
- LastConnectionFailure: None
- LastConnectionTime: 6/24/2015 2:17:55 PM
- LastConnectionUser: {}
- LastDeregistrationReason: AgentShutdown
- LastDeregistrationTime: 6/24/2015 12:07:25 PM
- LastHostingUpdateTime: 6/24/2015 1:21:10 PM
- MachineInternalState: Available
- MachineName: VDI-DEVXWIN702
- MetadataMap: {}
- OSType: Windows 7 Service Pack 1
- OSVersion: Microsoft Windows NT 6.1.7601 Service Pack 1
- PersistUserChanges: OnPvd
- PowerActionPending: False
- PowerState: On
- ProvisioningType: MCS
- PublishedApplications: {}
- PvdStage: None
- RecordTime: 2015-06-24 14:43:51
- RegistrationState: Registered
- SID: S-1-5-21-4018078286-1562769560-2405942992-1826
- ScheduledReboot: None
- SessionAutomouslyBrokered: False
- SessionClientAddress: 10.20.30.101
- SessionClientName: SVR-TS02

Annotations in the image include:

- 'View the end users VDA version' pointing to AgentVersion.
- 'Identify the Delivery Controller' pointing to ControllerDNSName.
- 'Additional session details' pointing to the right-hand column of properties.

View the session properties for each user session

Automated Remediation Actions

The screenshot shows the configuration for a monitoring rule. The rule name is 'Print Error - Print Spooler Stck (splwow64.exe)' and the description is 'Restart Print Spooler Service to resolve printing issues'. The severity is set to 'Caution'.

ProcessWatch Configuration:

- Process Name: splwow64.exe
- Process Path: C:\Windows\splwow64.exe
- Should be: Running Not Running
- Notify Only: Restart Terminate
- Delay: 0
- Thresholds: Instance Count: [] WildCard Exclusions: [] Incl All:

Selections:

- Groups: Servers/Workstations Tree
- Auto Register Group (System generated group for auto-registered computers.)
 - DEVVDI-XD56WIN701
 - VDI-DEVCUA02
- DEV Delivery Controllers
 - DEVSVR-XDDC03
 - DEVSVR-XDDC06
- DEV Infrastructure
 - DEVGPM-DEV01
 - DEVSVR-LIC02
 - DEVSVR-SF03
 - DEVSVR-WI01
 - DEVWS-MZAPPA

Buttons: Open All, Select All, Unselect All, Close All

Execute simultaneous alerts and fix actions

Self-healing feature provides automated fix actions

Alert Resolution Feature

Alert Resolution Notes

A program, the Csid displayed in the message, tried to start the DCOM server by using the DCOM infrastructure. Based on the security ID (SID), this user does not have the necessary permissions to start the DCOM server

RESOLUTION

Verify that the user has the appropriate permissions to start the DCOM server.

To assign permissions:

1. Using Regedit, navigate to the following registry value
HKCR\Clsid\{clsid value}\localserver32
The clsid value is the information displayed in the message.
2. In the right pane, double-click Default. The Edit String dialog box is displayed. Leave this dialog box open.
3. Click Start, and then click Control Panel.
4. Double-click Administrative Tools, and then double-click

Save remediation instructions in Alert Resolution feature

Include remediation instructions with alerts to ensure consistency of fix actions and reduce resolution time

Citrix ICA/HDX Latency Report

Citrix XenApp - ICA Latency Report

Citrix XenApp - ICA Latency for Specified Report Period - Show Top 20 Average

Reporting Period: Fri, January 01, 2016, 07:00 AM -- Fri, January 08, 2016, 07:00 AM Report Run: Tue, February 02, 2016, 12:19 PM Sort By: ICA Latency

Identify how network latency could be affecting a user session

User Account	Client Name	Client Address	Session Name	ICA Latency	Network Latency	ICA RTT	App Name	Date/Time	Server Name
Kelsey Hoff	SVR-TS02	10.20.30.102	ica-cgp 108	245.7 ms.	266.4 ms.	144.7 ms.	Internet Explorer, YouTube - Chrome	1/7/2016 14:45:45	SVR-XA76WIN1201
Adam Kelly	SVR-TS02	10.20.30.102	ica-cgp 129	171.0 ms.	171.0 ms.	606.7 ms.	Internet Explorer, YouTube - Chrome	1/7/2016 11:10:49	SVR-XA76WIN1201
lostest01	GLS-EP01	10.20.100.225	ica-cgp 29	19.0 ms.	0.0 ms.	3.0 ms.	Acrobat Reader DC	1/7/2016 12:09:33	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 61	7.0 ms.	0.0 ms.	5.0 ms.	Acrobat Reader DC	1/7/2016 15:24:50	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 30	6.3 ms.	0.0 ms.	0.0 ms.	Acrobat Reader DC	1/7/2016 11:54:49	SVR-XA76WIN1202
Mike McLeod	SVR-TS02	10.20.30.102	ica-cgp 33	5.3 ms.	5.3 ms.	82.7 ms.	Internet Explorer, YouTube - Chrome	1/6/2016 07:34:47	SVR-XA76WIN1201
lostest01	GLS-EP01	10.20.100.225	ica-cgp 54	4.5 ms.	0.0 ms.	0.0 ms.	Acrobat Reader DC	1/7/2016 14:40:27	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 76	4.0 ms.	0.0 ms.	0.0 ms.	Acrobat Reader DC	1/7/2016 12:40:14	SVR-XA76WIN1202
Stacy Brown	SVR-TS03	10.20.30.103	ica-cgp 75	1.6 ms.	7.0 ms.	26.0 ms.	Server Manager	1/7/2016 08:49:21	SVR-XA76WIN1202
John Marshall	SVR-TS03	10.20.30.103	ica-cgp 131	1.0 ms.	1.0 ms.	62.5 ms.	Server Manager	1/4/2016 08:50:44	SVR-XA76WIN1201
lostest01	GLS-EP01	10.20.100.225	ica-cgp 15	1.0 ms.	1.0 ms.	31.0 ms.	Acrobat Reader DC	1/7/2016 03:54:54	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 108	1.0 ms.	0.0 ms.	0.0 ms.	Acrobat Reader DC	1/6/2016 13:20:24	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 16	1.0 ms.	0.0 ms.	32.0 ms.	Acrobat Reader DC	1/5/2016 19:09:58	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 100	1.0 ms.	0.0 ms.	2.0 ms.	Acrobat Reader DC	1/5/2016 19:19:31	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 92	1.0 ms.	0.0 ms.	31.0 ms.	Acrobat Reader DC	1/5/2016 07:35:22	SVR-XA76WIN1202
lostest01	GLS-EP01	10.20.100.225	ica-cgp 82	1.0 ms.	0.0 ms.	31.0 ms.	Acrobat Reader DC	1/5/2016 05:39:58	SVR-XA76WIN1202
Greg Jackson	SVR-TS03	10.20.30.103	ica-cgp 70	1.0 ms.	0.5 ms.	9.0 ms.	Server Manager	1/7/2016 16:11:54	SVR-XA76WIN1202
Thomas Fitzgerald	SVR-TS03	10.20.30.103	ica-cgp 6	1.0 ms.	0.5 ms.	219.5 ms.	Server Manager	1/4/2016 10:30:45	SVR-XA76WIN1202
Kelsey Hoff	GLS-EP03	10.20.100.22	ica-cgp 94	0.7 ms.	0.7 ms.	29.1 ms.	YouTube - Chrome	1/7/2016 11:10:49	SVR-XA76WIN1201
lostest01	GLS-EP01	10.20.100.225	ica-cgp 27	0.7 ms.	0.0 ms.	4.0 ms.	Acrobat Reader DC	1/7/2016 11:15:47	SVR-XA76WIN1202

Quickly identify the top users who've experienced slow session performance

ICA/HDX Latency and RTT in one view

Report provided by Goliath Technologies
Systems management software for physical, virtual & cloud infrastructure

Report on Citrix XenApp & XenDesktop ICA/HDX Latency for real or simulated end users

Citrix Logon Duration Report and Drill Down

Citrix XenDesktop Session Logon Duration Report - Session Logon Duration (in Seconds) Report for Specified Period

Reporting Period: Fri, January 01, 2016, 12:41 PM -- Sun, January 31, 2016, 12:41 PM Report Run: Tue, February 02, 2016, 12:48 PM Sort By: Machine Name

Machine Name	User Account Name	User Display Name	Connect D/T	Reconnect	Logon Duration Breakdown						Interactive	Group Name
					Logon	Client Valid	Auth	GPO	Scripts	Profile		
VDI-DEV-CUSTA03	GOLIATH\Stacy Anderson	Stacy Anderson	2016-01-15 15:52:18.000	Yes	32.9	6.58	0.25			0.59	3.89	VDI - WIN7-CUSTA
VDI-DEV-CUSTA03	GOLIATH\Greg Jackson	Greg Jackson	2016-01-15 11:10:33.000	Yes	35.4	3.39	0.23	6.06	0.25	0.25	3.95	VDI - WIN7-CUSTA
VDI-DEV-CUSTA03	GOLIATH\Todd Matzelle	Todd Matzelle	2016-01-12 08:01:50.000	No	349.0	156.10	0.70	3.92		0.92	13.06	VDI - WIN7-CUSTA

Additional Logon Duration Details			
Action	Time	Duration	Details
Brokering	08:01:50.000	0.14 secs.	ZDC / DDC Broker: SVR-XDDC03
Get Account Data	07:58:35.936725600	0.02 secs.	Account details: Account Name : CN=Todd Matzelle,OU=Goliath,DC=corp,DC=goliathtechnologies,DC=corp DC Name : \SVR-DC02.corp.goliathtechnologies.com DC Domain Name : CORP.GOLIATHTECHNOLOGIES.COM
Domain Controller Data	07:58:35.936725600	0.97 secs.	Domain Controller details: Domain Controller Name : \SVR-DC02.corp.goliathtechnologies.com Domain Controller IP Address : \10.20.30.6 List of applicable Group Policy objects: Local Group Policy
LDAP Calls	07:58:37.699582100	0.02 secs.	
File Accessed	07:58:37.730783100	0.31 secs.	Making system calls to access specified file. \\corp.goliathtechnologies.com\sysvol\corp.goliathtechnologies.com\Policies\{31B2F340-016D-11D2-945F-00C04FB984F9}\gppt.ini
Citrix Group Policy Extensions	07:58:39.353235100	0.22 secs.	Starting Citrix Group Policy Extension Processing. Local Group Policy
Citrix Profile Management Extension	07:58:39.587242600	0.17 secs.	Starting Citrix Profile Management Extension Processing.

Estimated network bandwidth on one of the connections: 1000000 kbps.
A fast link was detected. The Estimated bandwidth is 1000000 kbps. The slow link threshold is 500 kbps.

VDI-DEV-CUSTA04	GOLIATH\Kelsey Hoff	Kelsey Hoff	2016-01-07 14:46:41.000	No	24.8	6.06	0.23			0.67	3.95	VDI - WIN7-CUSTA
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Report on Citrix XenApp & XenDesktop Logon Duration and view the logon duration breakdown for real and simulated end users

Identify scripts or group policy extensions with higher than normal load times

View users experiencing slow logons and identify where logon duration times occurred within the logon process

Goliath Performance Monitor provides a large list of out-of-the-box reports to proactively anticipate, troubleshoot, resolve, and prevent performance issues:

- Citrix XenApp End-User Experience Report**
 Provides XenApp End-User Experience information by displaying key metrics like application, logon duration, ICA latency, client speed and client address for users launching applications in a given time frame.
- Citrix XenApp End-to-End Connection Report**
 Provides connection information for users launching Citrix XenApp. Metrics include: client name, address, speed, and type, as well as the broker and server used while launching the application.
- Citrix XenApp Logon Duration Report**
 Breaks down a user's logon process into each of the stages to help understand what needs to be optimized to improve logon times. This report can also be used to identify and troubleshoot session load problems, by identifying what may be getting stuck or taking too long to process. Threshold based alerting on user logon time also possible.
- Citrix XenDesktop End User Activity Report**
 Breaks down, for a period of time, a user's session counts, total session duration, average session duration, and last session time.
- Citrix XenDesktop ICA Latency Report**

Run on-demand or scheduled to show top 20 users with ICA Latency or all users with more than 'x' ms of latency.

- **Citrix XenDesktop Logon Duration Report**

Breaks down a user's logon process into each of the stages to allow an administrator to understand what needs to be optimized to improve logon times. This report can also be used to identify and troubleshoot session load problems, by identifying what may be getting stuck or taking too long to process. Threshold based alerting on user logon time also possible.

- **Citrix Gold Image Health Report**

Identifies errors that are taking place on all servers that have been provisioned with the same image to identify consistent errors attributed to a configuration or problem in the image itself that needs to be resolved.

- **Citrix Profile Errors**

Shows Errors related to user profiles including profile load, folder redirection, group policy, registry, and security.

- **Citrix Printing Health**

Identifies and iterates any errors that have taken place in the environment related to printer drivers, Citrix Universal Print Driver, printer auto-creation errors and failures, and print port mapping issues. If a customer is leveraging Citrix Universal Print Driver, conditions effecting UPD are also included in the report.

- **Citrix Profile Management Report**

Identifies any errors or problems specific to CPM, and includes group policy and registry events that take place as well.

- **Citrix Group Policy & Registry Health Report**

Identifies corruption, failures, security issues, and other events that have taken place stemming from Group Policy and the Registry.

- **Citrix XenApp End-User Activity Report**

Breaks down a user's session counts, total session duration, average session duration, and last session time over a specified period of time.

- **Citrix XenApp Client Report**

Breaks down Citrix Client versions accessing the environment, to be used to track upgrade progress, identify inconsistencies, troubleshoot session problems, and identify the different devices accessing environment. Metrics Include: Date, User, App/Desktop/VDI accessed, client IP address, Citrix Client Version, Device Type.

- **Citrix XenApp ICA Latency Report**

Run on-demand or schedule to show top 20 users with ICA Latency or all users with more than 'x' ms of latency.

- **XenApp Server Session Activity Report**
Lists all XenApp Sessions over a given period of time including: User, Application/Published Desktop, Server, Date, and Time.
- **Citrix XenApp Server Errors**
Report includes Terminal Services, ICA failures, and events preventing session launch.
- **Citrix XenDesktop Client Report**
Breaks down Citrix Client versions accessing the environment, to be used to track upgrade progress, identify inconsistencies, troubleshoot session problems, and identify the different devices accessing environment. Metrics Include: Date, User, App/Desktop/VDI accessed, client IP address, Citrix Client Version, Device Type.
- **Citrix XenApp Server Health Report**
Provides basic performance metrics to ensure enough resources are available for operation, metrics include: Server Name, XenApp Server Load, Disk Space, CPU, RAM, Network Latency, Number of Users, and Last Reboot.
- **Citrix XenDesktop Health Report**
Includes the basic performance metrics to ensure enough resources are available for operation, metrics include: VM Name, Registration State, Summary State, Broker Name, Connected User, and Login time.
- **Citrix XenDesktop Peak Usage Report**
Tracks utilization over a given period of time on a 24 hour scale to understand usage at different times of day. Allows administrators to determine usage patterns and peak usage times to ensure resource availability aligns with user behavior. Also important for understand licensing requirements from Citrix.
- **Citrix XenDesktop Session Activity Report**
Lists out all of the XenDesktop VDI Sessions over a given period of time including: User, VDI, Broker, Date, and Time.
- **Citrix XenApp Environment Summary Report**
This report breakdowns the average CPU and memory usage by delivery group, the average ICA Latency, login times by stage, session, and user count to provide an overview of what was trending in the environment during a given period of time.
- **Citrix XenApp License Report**
This report will presents the number of unique users that logged into the environment over a defined stretch of time along with the total number of licenses so that administrators can determine how close they are to running out of licenses during peak usage periods.
- **Citrix XenDesktop Environment Summary Report**
This report breakdowns the average CPU and memory usage by delivery group, the average ICA Latency, login times by stage, session, and user count to provide an overview of what was trending in the environment during a given period of time.

- **Citrix XenDesktop License Report**

This report will presents the number of unique users that logged into the environment over a defined stretch of time along with the total number of licenses so that administrators can determine how close they are to running out of licenses during peak usage periods.

- **Citrix XenApp Peak Usage Report**

Tracks utilization over a given period of time on a 24 hour scale to understand usage at different times of day. Allows administrators to determine usage patterns and peak usage times to ensure resource availability aligns with user behavior. Also important for understand licensing requirements from Citrix.