GOLIATH TECHNOLOGIES®

XenApp & XenDesktop

A Technical Overview

By The Goliath Technologies Technical Team

CITRIX® Ready

Contents

Summary

This document highlights a few of the differentiating features Goliath offers that are currently unavailable with any other solutions in the marketplace, these features allow organizations to more proactively manage their Citrix environments and the associated end user experience.

Two Powerful Citrix-Focused Products

I. GOLIATH APPLICATION AVAILABILITY MONITOR

Confirm Citrix is Available for Local or Remote End Users

This is a complete early warning system that lets you know in advance if an end user is going to have a problem when they try to access an application, so you can fix it before they are negatively impacted. The technology is designed to:

- Confirm that applications and the IT delivery infrastructure are available and working
- Send alerts if they fail or are slow for troubleshooting
- Provide reports as objective evidence of success, slowness or failure so permanent fix actions can be put in place to prevent issues in the future.

II. GOLIATH PERFORMANCE MONITOR

Proactive IT Performance Monitoring for Virtual Server, Virtual Desktop, Hybrid Cloud, and Mobile Environments

Goliath Performance Monitor provides complete support for monitoring virtual server, virtual desktop and hybrid cloud environments, and provides specialized modules for certain EHR and EMR applications. The technology has been architected from the ground up to help IT administrators anticipate issues before they become problems, troubleshoot and resolve problems quickly and with minimal end user impact when they do occur, and ultimately prevent them from happening in the future.

Future releases of Goliath Performance Monitor will include additional functionality to monitor Citrix NetScaler.

Early Warning System

Goliath Application Availability Monitor (GAAM)

Goliath is the industry's only proactive, production-ready end-user experience software that validates availability of the entire Citrix delivery infrastructure (including the NetScaler). It ensures availability by executing real Citrix sessions that exercise the exact same steps a user takes during the Citrix logon process. Regardless of whether a user is remote or local, the Goliath Application Availability Monitor gives administrators an "early warning system" that allows them to know exactly what the Citrix end user experience will be like for their users – in advance.

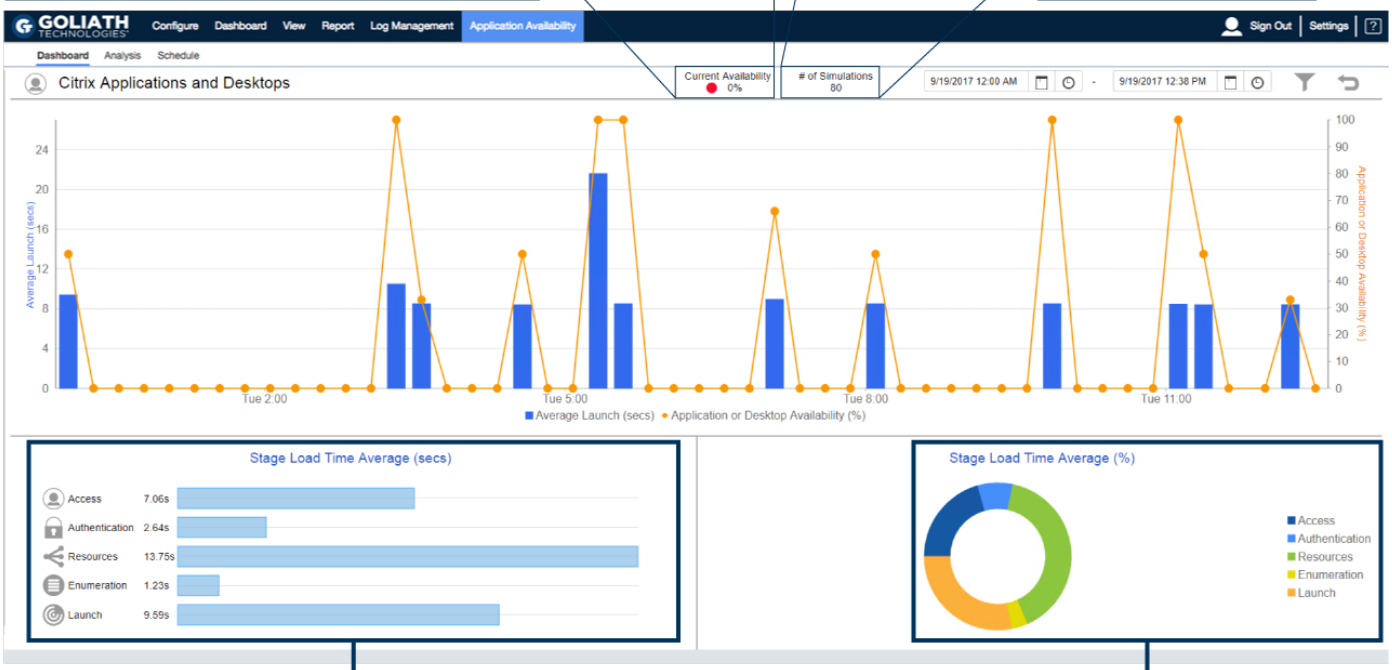
Pictured Below: (1) The Application Availability Monitor Dashboard displaying a real-time assessment of Citrix Availability and then (2) breaking down launch times by stage.

1 Immediate Citrix availability assessment, taking into consideration NetScaler, Storefront, Delivery Controller, SQL and Session Host availability, including XA configuration.

Current Availability 0%

# of Simulations 80

Automatically schedule launches to continuously test availability.



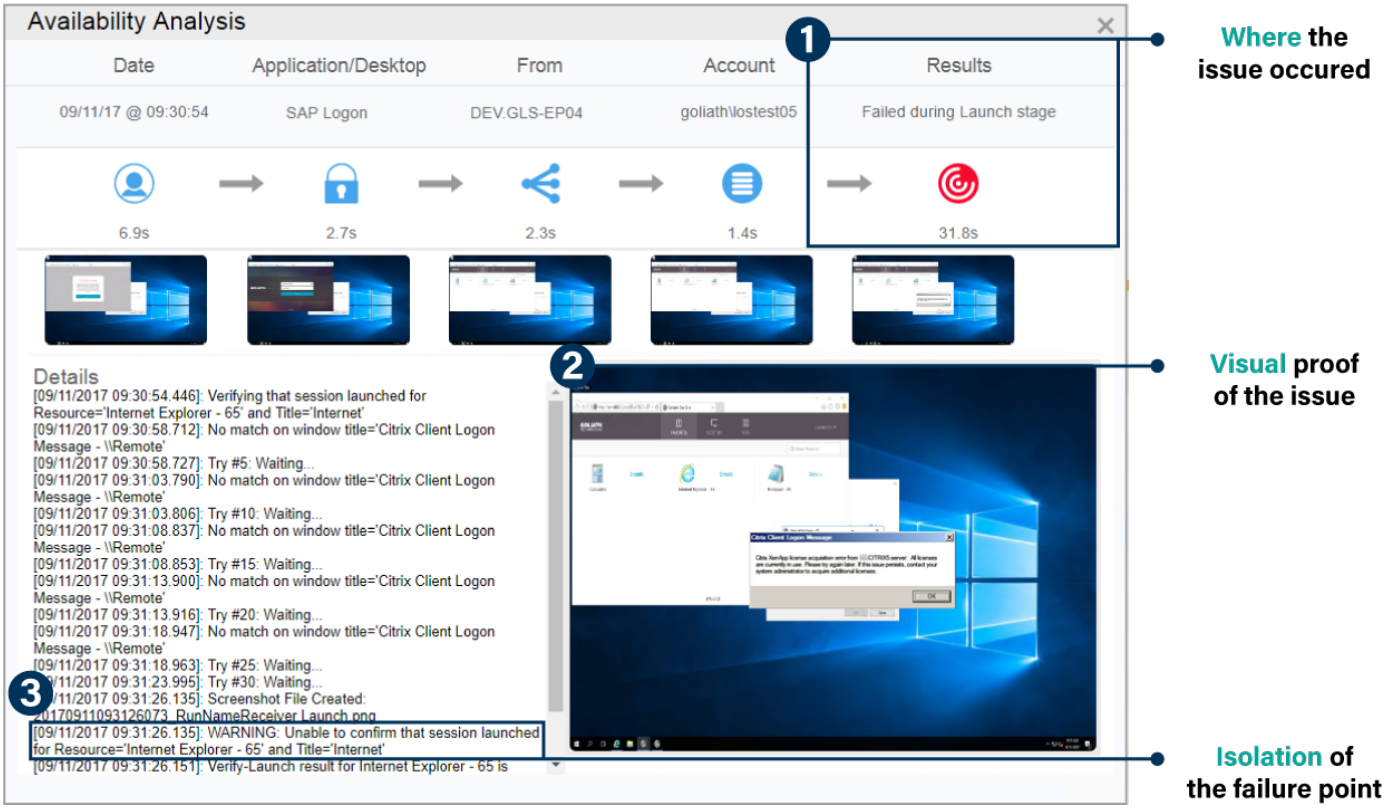
2 Breakdown failures by stage to determine if problems are related to overall environment health or one part of the delivery workflow.

Breakdown launch times by stage to identify which stage should be optimized to yield the best results, and how they are performing.

End User Screenshot Analytics

When there is a logon failure, an administrator will be alerted immediately. Using the simulation details, users pinpoint where the failure occurred and the root cause.

Illustrated Below: Quickly drill down to investigate failures right from the application availability dashboard by clicking on the magnifying glass. In just three steps, you can then see *where* the logon issues occurred during the logon process and *what* the issue was:



1. In this case, failure occurred at the launch stage (marked by the '**1**')
2. The screenshot (**2**) proves that the application failed to launch and shows the root cause of the Citrix workflow and application launch failure as being the result of a licensing problem
3. By navigating to the "Details" or "Analytics" section (**3**), we can see that the launch failed at the point of verifying that Internet Explorer launched

GOLIATH PERFORMANCE MONITOR

Topology View

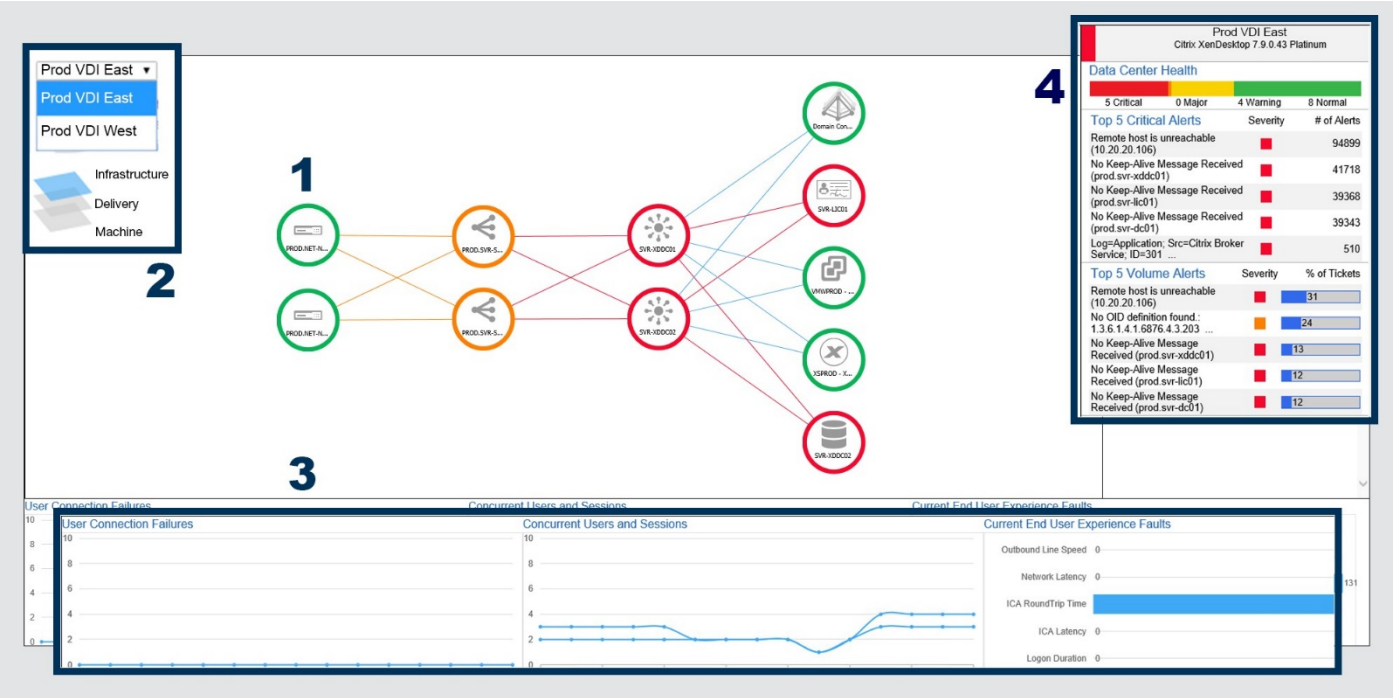
Topology View automatically builds out a dependency map of your Citrix infrastructure. It requires no manual set-up or scripting and adapts to new components as they are added. This eliminates the time it takes to correlate relationships between elements. It shows which elements are affecting other elements and how through color-coded connection lines and specific metrics. Then, as issues occur in your infrastructure alerts will 'bubble up' allowing IT professionals to see the impacted elements at a glance. This single, macro view of your Citrix environment allows administrators to switch between different data centers and farms, breaking down traditional siloed architecture and allowing effective management and troubleshooting of your environment.

Highlights:

- Automatically deploys to your environment, with no manual set-up.
- Eliminates the time it takes to correlate root-cause to elements in your environment by graphically representing all the connection between component in your Citrix infrastructure.
- Easily switch between data centers and farms to eliminate siloed architectures.
- Drill down to the host level and view specific metrics for each element in your environment.
- View end user experience metrics for different layers in your environment at a glance.

Physical Layer

1) Automatically map your entire Citrix infrastructure to visualize connections, relationships, and health of components.
2) Easily switch views to different data centers or locations
3) Correlate end user experience issues to delivery infrastructure components and health.
4) See context-sensitive metrics and alerts for selected components.



Delivery layer

1) Shows the logical connections and dependencies of your Citrix environment by delivery group, machine catalog, and down to the specific image.
2) Correlates end user experience metrics for the selected delivery groups.
3) Delivers context sensitive metrics for any selected component.

Machine Layer

1) In addition to the delivery group elements, the machine layer displays Citrix PVS and/or MCS as well as the hypervisor resources and hosts.
2) The details on the right pane will update according to the selected node.

Real-Time Citrix Performance Graphs

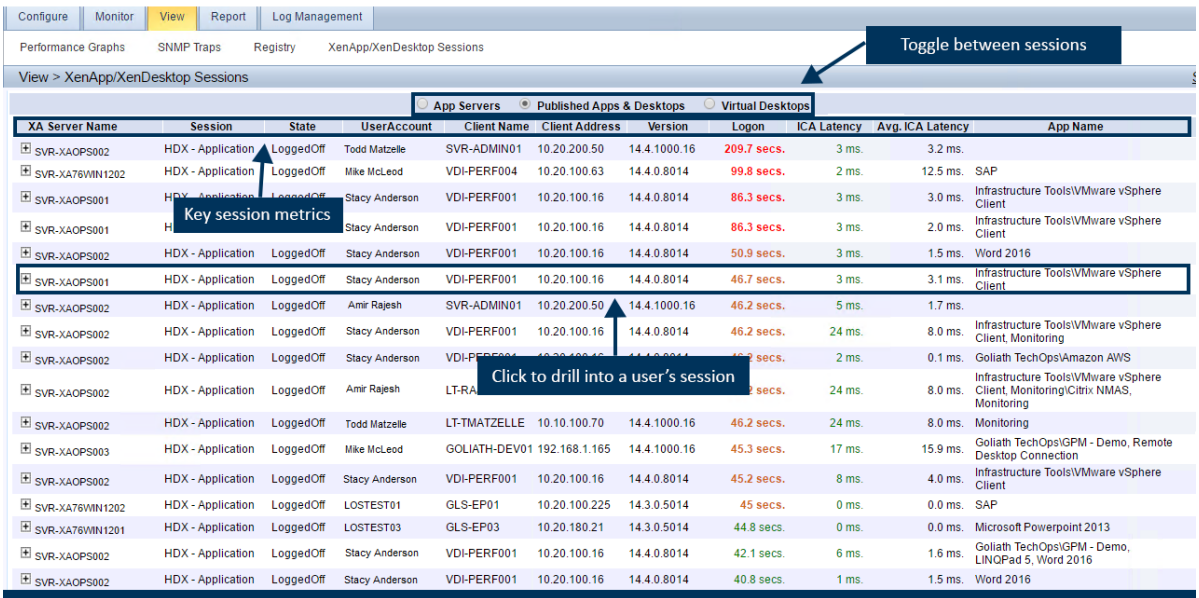
Goliath provides five layers of visibility in one console: hardware, host, VM, OS and application. The performance graphs allow administrators to trend Citrix ICA/HDX Latency and Logon Duration as well as resource utilization of each server.

View Citrix XenApp & XenDesktop along with the entire supporting infrastructure in one console

Real-Time XenApp & XenDesktop Session Display

Goliath provides granular real-time and historic data for all Citrix Sessions. When there are end user experience issues, drill into a user session to gain deeper visibility and identify the root cause.

Product Screenshot: Real-Time XenApp & XenDesktop Session Display - Published Apps & 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
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-RA			secs.	24 ms.	8.0 ms.	Infrastructure Tools\VMware vSphere Client, Monitoring\Citrix NMAS, Monitoring
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
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, LINQPad 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

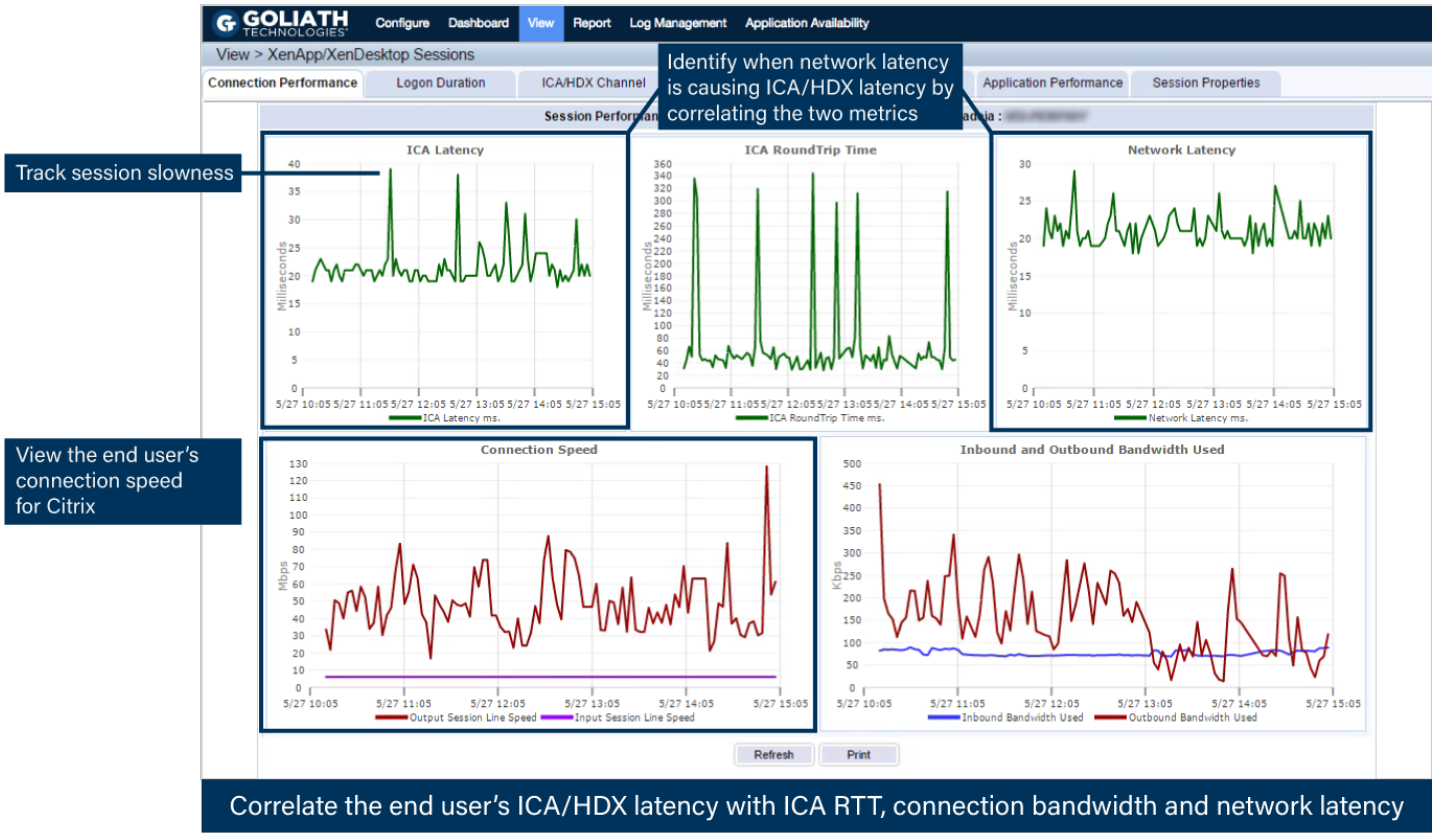
Troubleshoot real or simulated end user sessions historically or in real-time

Real-Time ICA Channel Drill Down from Session Display

Goliath provides industry-leading visibility into Citrix session performance by breaking down the ICA/HDX protocol and returning precise metrics around individual ICA/HDX channel performance.

Detailed ICA/HDX Channel Metrics Include:

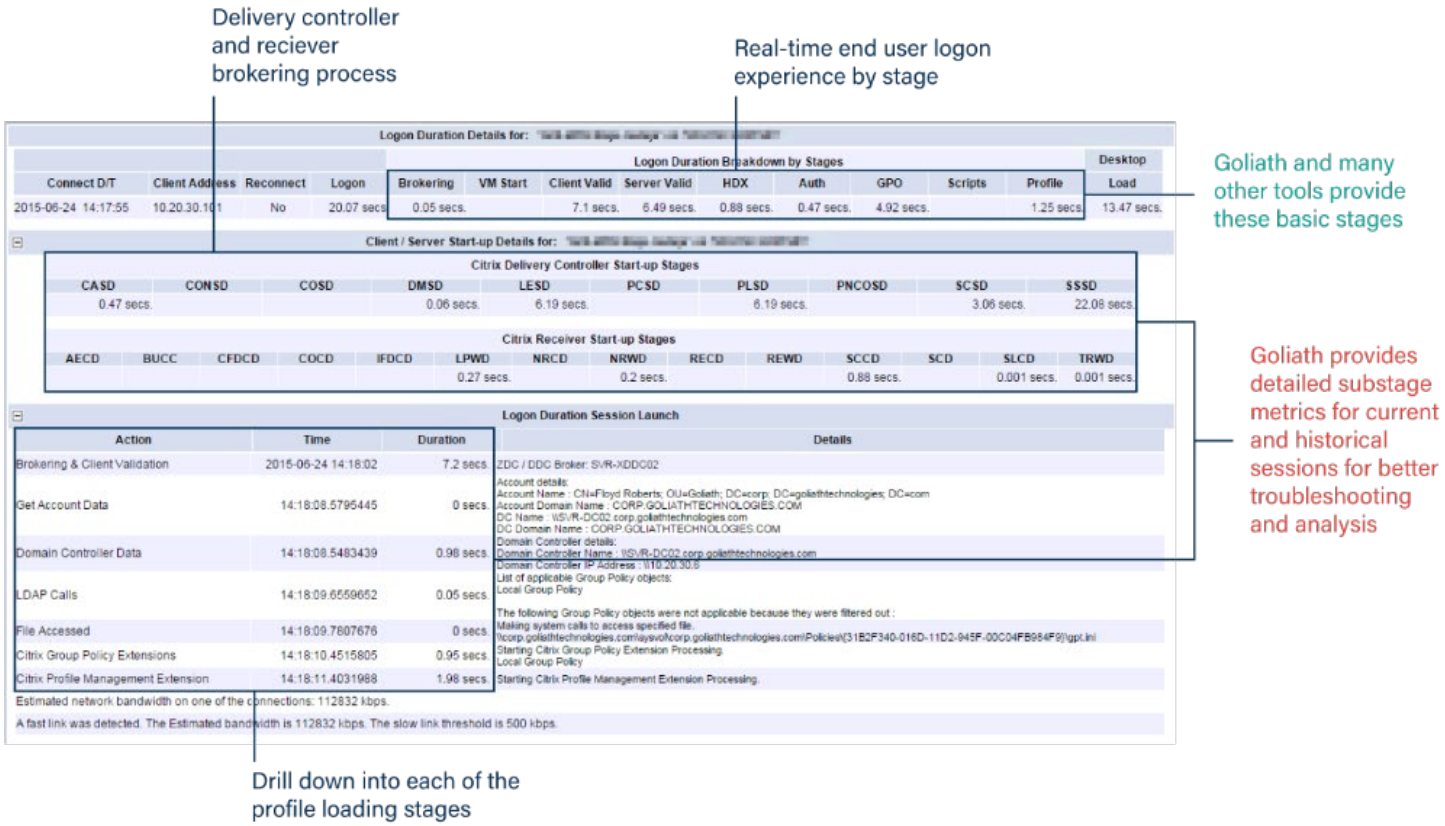
User Connection Performance
Printing Bandwidth
Audio Bandwidth
Clipboard Bandwidth
Keyboard and Mouse Bandwidth
Thinwire Bandwidth
DCR Bandwidth
Multimedia Bandwidth
And more!



Real-Time Citrix Logon Duration Drilldown

If you can't drill down into all 33 stages of the Citrix logon process, then you can't isolate and fix root cause of logon slowness. With the Citrix Logon Duration monitoring and troubleshooting functionality of Goliath Performance Monitor you can now capture real-time Logon Duration times and get alerted to end user logon slowness on any of the 33 Logon Duration Stages.

The real-time Citrix Logon Duration Drilldown 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 times is also possible.



The logon duration drilldown allows an administrator to parse logon times into each of the stages and sub stages. This includes the details of the brokering process that the Citrix Delivery Controller and Receiver is responsible for and the breakdown of the session launch from mouse click to being delivered onto the XenApp/XenDesktop Server or VDI, including but not limited to:

- End User Mouse Click to Launch Application or Desktop to Session Host
- ICA/HDX File Download
- XML Service Name Resolution of an App or Desktop to a Session Host
- User Authentication
- Time to Request Session Creation
- Determine the Session Host
- STA Ticket Retrieval
- Logon Script Execution
- Profile Load and Drive Mapping
- Session Creation
- Desktop Load

When the Session is established on the **XenApp/XenDesktop Serve**r or **VDI**, **GPM** further breaks down the policy and profile load stages to determine the root cause of which script or stage caused the logon delay. This is accomplished by providing the details of how long each process took and iterating each execution stage and how that occurs including:

- Identifying and establishing connection to the Domain Controller for authentication
- LDAP calls to copy over policies
- Copying over each script file

Execution of each group policy and script to determine the execution time of:

Registry Extensions
Citrix Group Policy
Folder Redirection
Citrix Profile Management
Drive Mapping
Printer Mapping
OU Policy Execution

Out-of-the-Box Monitoring Intelligence

Goliath Performance Monitor comes with "embedded intelligence" consisting of hundreds of pre-configured monitoring rules and alerts based upon best practices from Citrix, VMware, Microsoft, and our own Goliath consulting experience. So immediately upon deployment, the product begins using this embedded intelligence to automatically search out these known failure points and conditions. This out-of-the-box functionality simplifies deployment and allows for administrators to immediately begin focusing on improving environmental bottlenecks or failure points

These rules cover the following conditions and more:

Virtual Host & VM: CPU, CPU Ready, Memory Provisioning, Storage Performance, and B/W Usage
XenApp & XenDesktop End User Experience: ICA/HDX Latency, Logon Duration, Server Load

Unregistered machines, active users/sessions per server, and available desktops

Application Crashes, Hangs, and High CPU/Memory utilization
Citrix Delivery Controller, StoreFront, PVS, Licensing Server, and Windows Dependencies
Group Policy and Registry Faults
Printing and Profile Faults
Windows Errors and Faults

Rule Name	Type	Severity	Description
Printing Error - Printer Auto Creation Failure	EventLogWatch	Normal	Print failure and printer auto creation failure
Printing Error - Printer, Driver, Print Security Errors	EventLogWatch	Normal	This rule performs system level printer errors and failures for repc
Printing Error - Windows Print Spooler Crash	EventLogWatch	Critical	splwow64.exe, Citrix Print Manager service process, crashed
Profile Error - Cannot load the local profile	EventLogWatch	Caution	Profile failed to load due to insufficient security rights or a corrupt
Profile Error - Citrix Profile Management Errors	EventLogWatch	Caution	CPM errors and failures
Profile Error - Folder Redirection Errors	EventLogWatch	Caution	Folder Redirection failures (catch-all)
Profile Error - Group Policy Processing Failed	EventLogWatch	High	Group Policy failed to process for user
Profile Error - Insufficient Rights or Corrupt Profile	EventLogWatch	High	cannot load the local profile - insufficient security rights or a corru
Profile Error - Local Profile Backed Up	EventLogWatch	Caution	Local User Profile failed to load and was backed up
Profile Error - Local Profile Failed to Load and was Backed Up	EventLogWatch	Normal	cannot load the local profile - profile backed up
Profile Error - Logging User on with a Temporary Profile	EventLogWatch	Caution	Local User Profile failed to load and user logged on with tempror
Profile Error - Registry Classes File Cannot Load	EventLogWatch	Caution	Cannot load classes registry file
Profile Error - Registry Load Failure	EventLogWatch	Caution	Registry failed to load due to insufficient memory or security right
Profile Error - Temporary Profile Loaded	EventLogWatch	Caution	Logging user on with a temporary profile
Profile Error - User Home Directory Path Not Accessible/Does Not Exist	EventLogWatch	High	Terminal Services User Home Directory was not set because the
Profile Error - User Store Cannot Be Reached	EventLogWatch	High	The User Profile Store cannot be reached
Profile Error - Windows Folder Redirection Failed	EventLogWatch	Caution	Failed to apply the policy and redirect folder because file cannot l
Profile Error - Windows Folder Redirection Failed; Access Denied	EventLogWatch	Critical	Failed to perform redirection of folder; Access is denied
Profile Error - Windows Profile Used Instead of CPM Profile	EventLogWatch	High	CPM could not monitor the profile of a user configured for extend
Profile Error - Windows User Profiles Service Errors	EventLogWatch	Normal	Windows User Profiles Service Errors
Program Needs More Memory	EventLogWatch	Caution	Monitor Program Needs More Memory System Event
Registry Failure - Cannot Load Classes Registry File	EventLogWatch	High	Cannot load classes registry file; profile load failure
Registry Failure - Could Not Apply Registry-based Policy Settings	EventLogWatch	High	Could not apply the registry-based policy settings for the Group P
Registry Failure - Incorrect Registry File Format	EventLogWatch	High	Insufficient security rights or memory; file not in registry file format
Registry Failure - Registry Hive corrupted and recovered	EventLogWatch	Caution	Registry hive failure
Registry Failure - User Profile Unable to Load	EventLogWatch	Normal	Registry load failures, cannot load classes registry file, and other

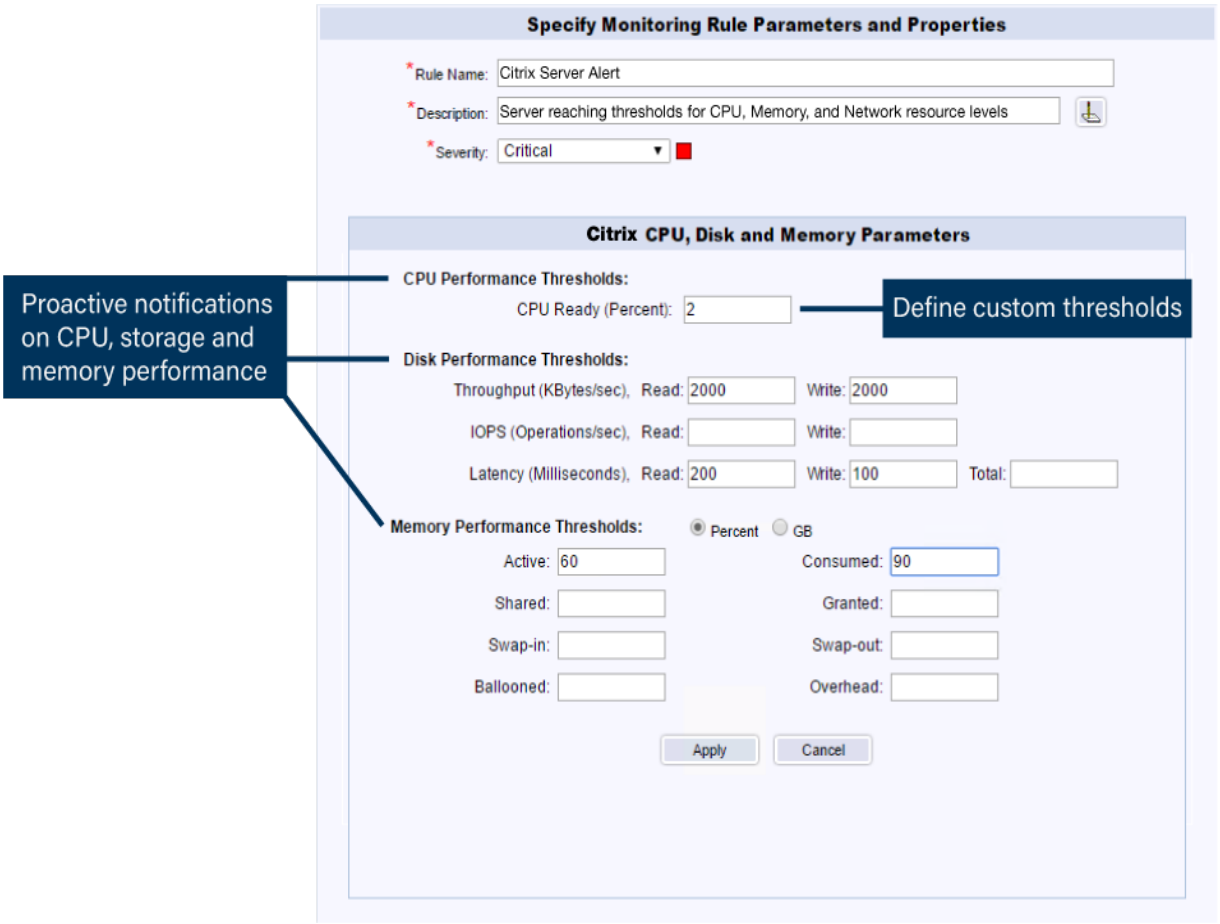
Printing
Profile
Registry

Advanced Remediation Capabilities to Improve Troubleshooting & Help Desk Operational Workflows

Goliath goes beyond providing differentiating Citrix visibility and granular metrics by also delivering unique operational features that allow organizations to take the next step in improving operational IT troubleshooting and Help Desk workflows.

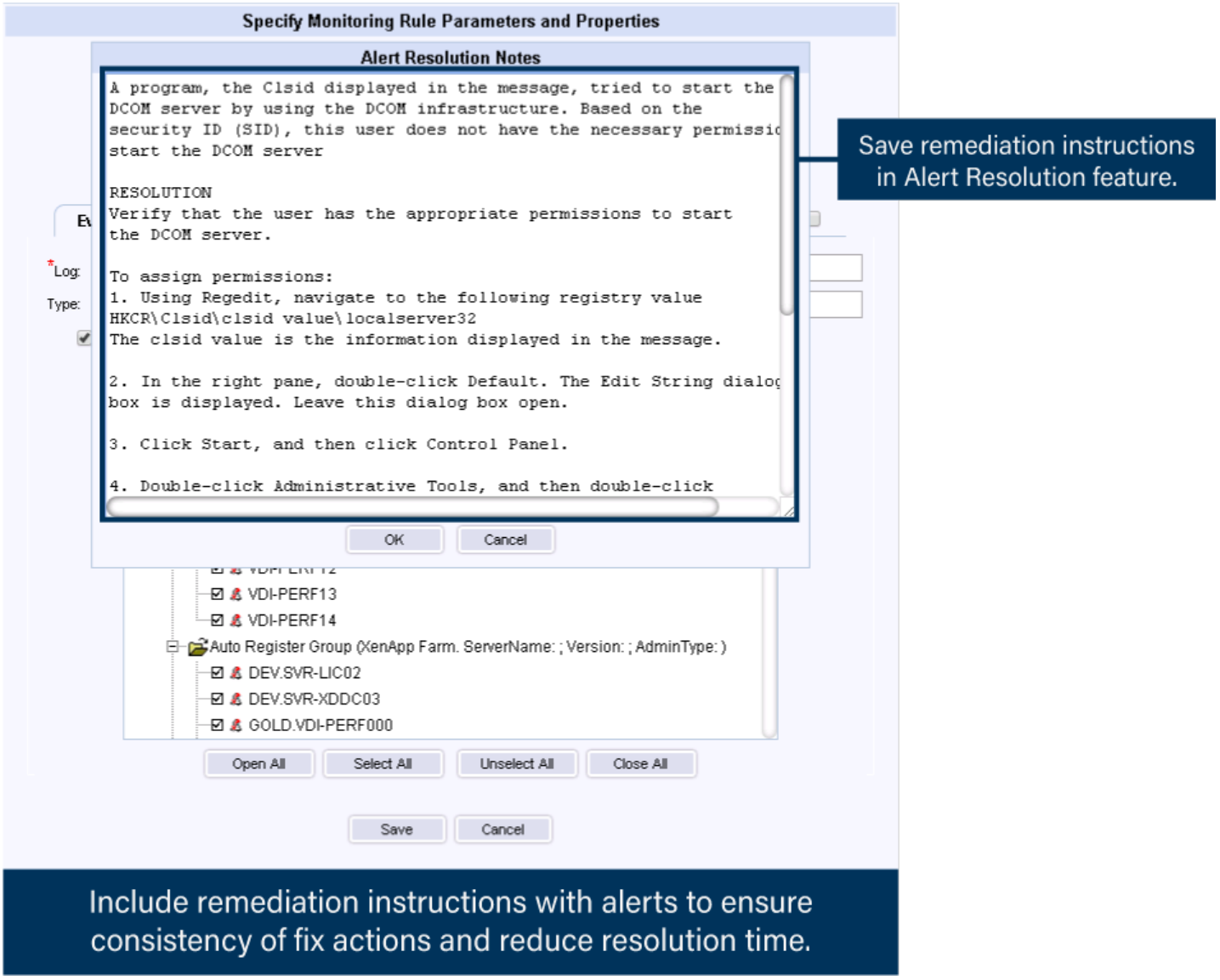
Threshold-Based Alerting

Define custom thresholds and receive proactive notifications based on faults, errors, and conditions so administrators can resolve issues before end users complain. Configuring alerts and tuning them to the specifications of each department requires no scripting or customizations because there are prebuilt templates for each type of alert.



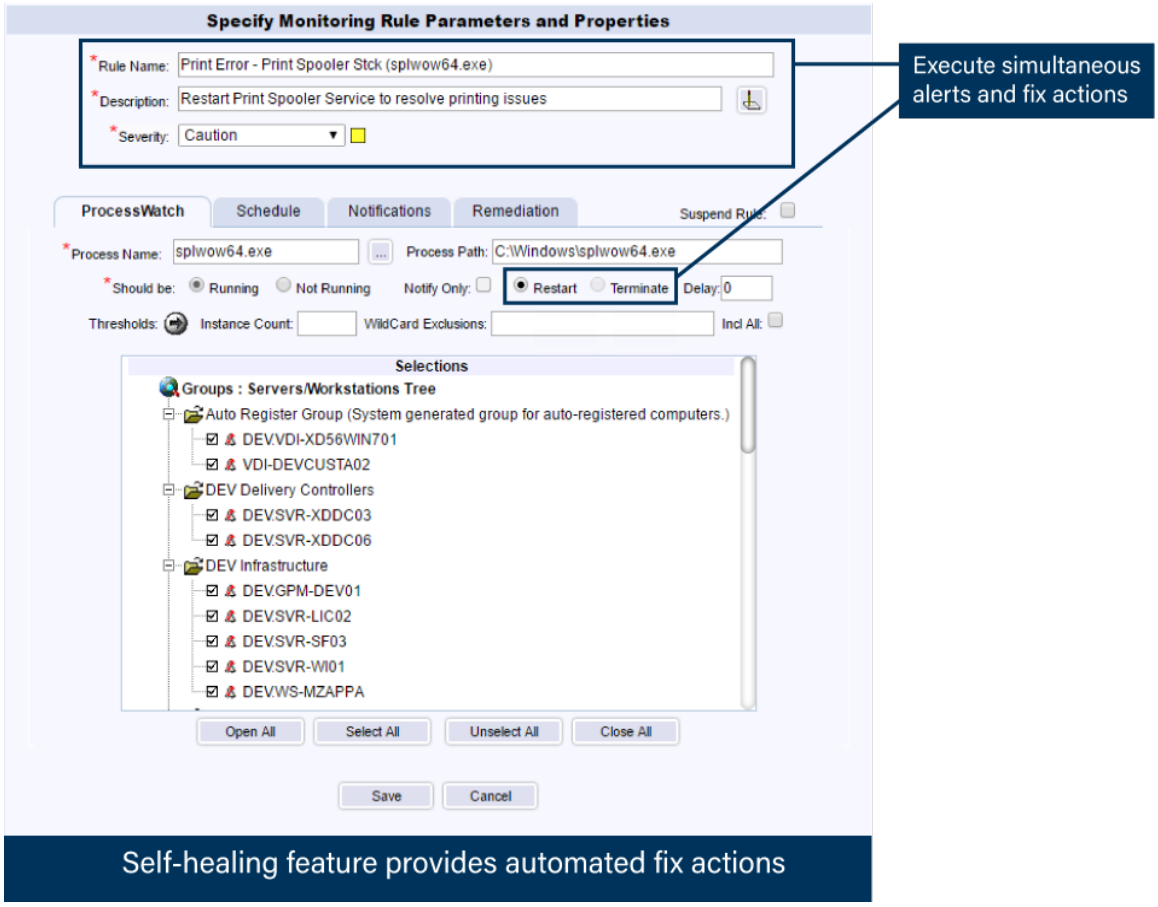
Alert Resolution Feature

For workflows that cannot be automated, Goliath allows administrators to automatically pass on troubleshooting instructions to the appropriate administrators when certain alerts are triggered. This enables consistent response quality regardless of the help desk responder and frees up senior resources for other projects rather than responding to recurring issues.



Automated Remediation Actions

You can configure automatic remediation fixes to take place when certain alerts are triggered based on faults, events or conditions. Whether it be restarting a service or running a PowerShell script, Goliath supports a number of “self- healing” workflows to allow IT organizations to dramatically increase Help Desk response times and implement truly proactive IT processes.



Citrix:

- Restart Print, Application, & Citrix Services
- Logoff disconnected user sessions
- Restart VDA Agent or VDI Sessions
- Disable Logons to XenApp Servers
- Kill Print Processes
- Clear Print Queues
- Kill Apps with Memory/CPU leaks
- Reset Applications
- Detect old Citrix Receiver Versions on client and automate update

Infrastructure:

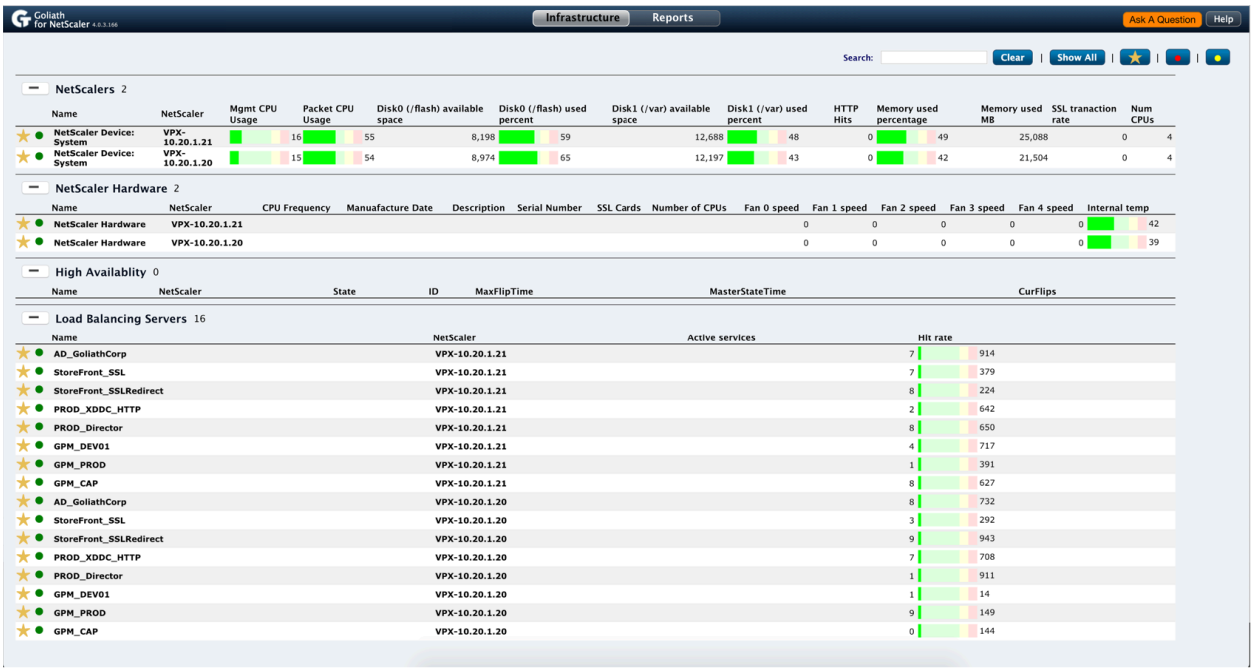
- Restart SQL Service
- Unlock User Account
- Rebalance VDI Sessions across Host
- Restart ANY Application
- Terminate Applications Processes
- Restart Backup Job
- Execute Windows Job Scheduler tasks
- Reboot Servers

NetScaler Monitoring Capabilities

Today, Goliath Performance Monitor monitors Citrix NetScaler via Ping to determine uptime and availability, and, in the case with NetScaler VPXs, resource utilization. Soon, this capability will be enhanced to add visibility from the NitroAPIs which provides information on NetScaler Infrastructure performance, resource usage and health visibility. In the future, Goliath for NetScaler – Infrastructure will monitor the health and activity of all NetScaler components, including hardware, vServers (VIPs), Services, Servers, Policies, Gateways, GSLB, AAA, App Firewall and Content Switching aggregated into a single console view. This will provide administrators a global overview of the entire environment that is not available with any other NetScaler management or monitoring technology.

Dashboard

The Infrastructure dashboard provides a single pane of glass for IT administrators to view their entire NetScaler deployment, track NetScaler resource utilization across multiple NetScalers, the load of configured virtual servers, services and policies. By leveraging the NetScaler Nitro APIs, Goliath for NetScaler can deliver detailed performance and health metrics from all components across the enterprise aggregated in a single view.



Reporting

66 Out of The Box Reports for Full Visibility into Your Infrastructure, Performance Issues & End User Experience

Citrix XenApp & Xen Desktop Reports

With the XenApp & XenDesktop reports in Goliath Performance Monitor (which includes modules for NVIDIA vGPU & EMR/EHR Apps), you get complete end-to-end visibility into the underlying delivery infrastructure so you can see how your environment is performing.

XenApp Reports

- Client Report
- End User Activity Report
- Environment Summary Report
- License Usage Report
- Peak Usage
- Server Health
- Session Activity

XenDesktop Reports

- Client Report
- End User Activity Report
- Environment Summary Report
- License Usage Report
- Peak Usage
- Session Activity
- Gold Image Health

Citrix XenApp & XenDesktop End User Experience Reports & VMware Reports

To proactively manage the Citrix XenApp/XenDesktop end user experience, using this set of reports will allow you to proactively detect and troubleshoot issues such as printing, profile and logon failures, and high ICA latency in order to remediate issues before end users complain.

Citrix End User Experience Reports

- XenApp Logon Duration
- XenDesktop Logon Duration
- XenApp ICA Latency
- XenDesktop ICA Latency
- XenApp End User Experience
- XenApp End to End Connection
- RDS & Terminal Services Errors
- User Logon Problems

Application Availability Monitor Reports

- Simulation Success or Failure Analysis

VMware & XenServer Performance Reports

- Citrix XenServer – Host Performance
- Citrix XenServer – Virtual Machine Performance
- Citrix XenServer – Storage Usage
- VMware ESX/ESXi – Host Performance
- VMware ESX/ESXi – Virtual Machine Performance
- VMware ESX/ESXi – Storage Usag

Citrix XenApp End User Activity Report

With this report, derive a user's session productivity by tracking the period of time that the session was actually active. Then, leverage this data and correlate it to business productivity and employee performance, or IT capacity and utilization decisions regarding the Citrix Infrastructure. Also identify the total number of unique users who connected to Citrix over a given period of time.

Citrix XenApp - End User Activity Report

Citrix XenApp - End User Activity, with Session Total 'Active' & Average 'Active' Time, for Specified Period

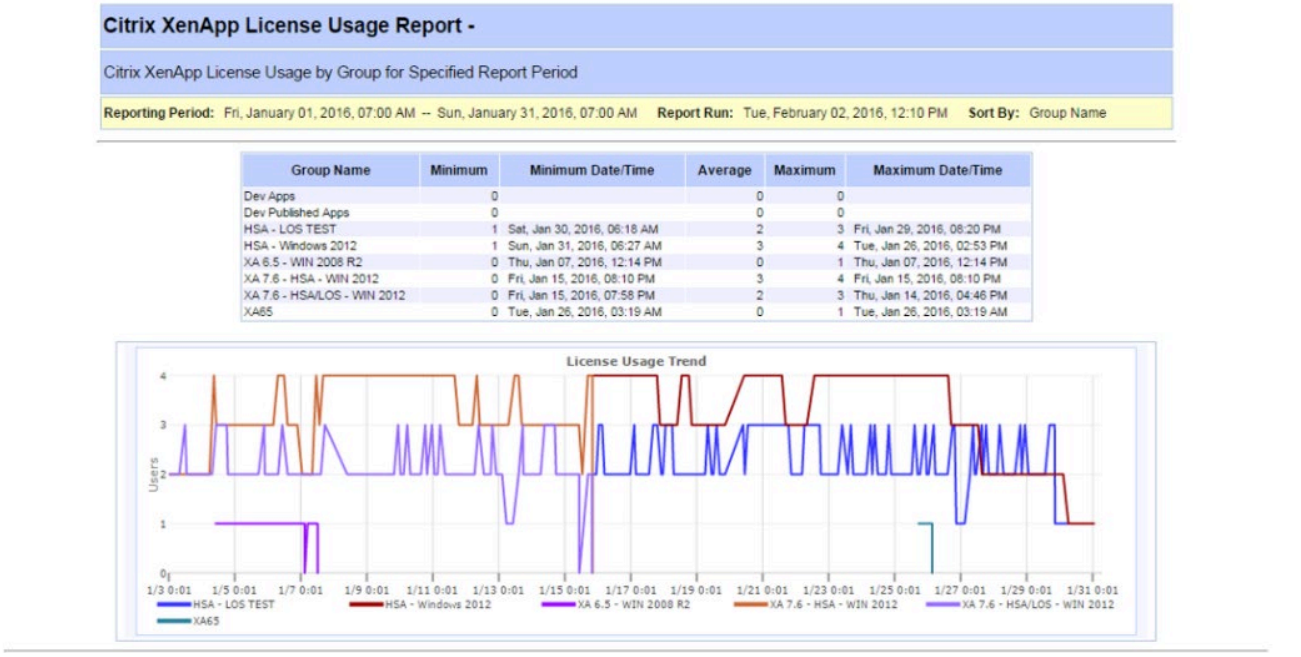
Reporting Period: Sun, February 07, 2016, 11:43 AM -- Mon, March 07, 2016, 11:43 AM **Report Run:** Mon, March 07, 2016, 11:43 AM **Sort By:** User Account Name

Total Users:	8				
User Account Name	**User Display Name**	**Session Count**	**Active Hours**	**Average Hours**	**Last Session Time**
GOLIATH\Randy Smith	Randy Smith	20	106.23	5.31	2016-02-23 11:21:06
GOLIATH\Hilary Diaz	Hilary Diaz	3	20.33	6.77	2016-02-18 15:23:26
GOLIATH\Greg Jackson	Greg Jackson	17	68.25	4.03	2016-03-04 14:21:13
GOLIATH\Ted McLeod	Ted McLeod	22	110.24	5.01	2016-03-04 14:02:28
GOLIATH\Stacy Aiken	Stacy Aiken	13	68.5	5.27	2016-03-04 14:16:54
GOLIATH\Thomas Reynolds	Thomas Reynolds	12	72.17	6.05	2016-03-03 12:04:04
GOLIATH\Floyd Widmann	Floyd Widmann	6	42.23	7.10	2016-03-02 12:50:47
GOLIATH\Stephanie Jones	Stephanie Jones	22	72.20	3.42	2016-03-04 13:35:12

HOW TO USE: Use this report to track user sessions and the length of time they spent in a Citrix Published Application, Published Desktop, or Virtual Desktop session.

Citrix XenApp License Usage Report

This report will present 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 License Usage Report -

Citrix XenApp License Usage by Group for Specified Report Period

Reporting Period: Fri, January 01, 2016, 07:00 AM -- Sun, January 31, 2016, 07:00 AM **Report Run:** Tue, February 02, 2016, 12:10 PM **Sort By:** Group Name

Group Name	Minimum	Minimum Date/Time	Average	Maximum	Maximum Date/Time
Dev Apps	0		0	0	
Dev Published Apps	0		0	0	
HSA - LOS TEST	1	Sat, Jan 30, 2016, 06:18 AM	2	3	Fri, Jan 29, 2016, 08:20 PM
HSA - Windows 2012	1	Sun, Jan 31, 2016, 06:27 AM	3	4	Tue, Jan 26, 2016, 02:53 PM
XA 6.5 - WIN 2008 R2	0	Thu, Jan 07, 2016, 12:14 PM	0	1	Thu, Jan 07, 2016, 12:14 PM
XA 7.6 - HSA - WIN 2012	0	Fri, Jan 15, 2016, 08:10 PM	3	4	Fri, Jan 15, 2016, 08:10 PM
XA 7.6 - HSA/LOS - WIN 2012	0	Fri, Jan 15, 2016, 07:58 PM	2	3	Thu, Jan 14, 2016, 04:46 PM
XA65	0	Tue, Jan 26, 2016, 03:19 AM	0	1	Tue, Jan 26, 2016, 03:19 AM

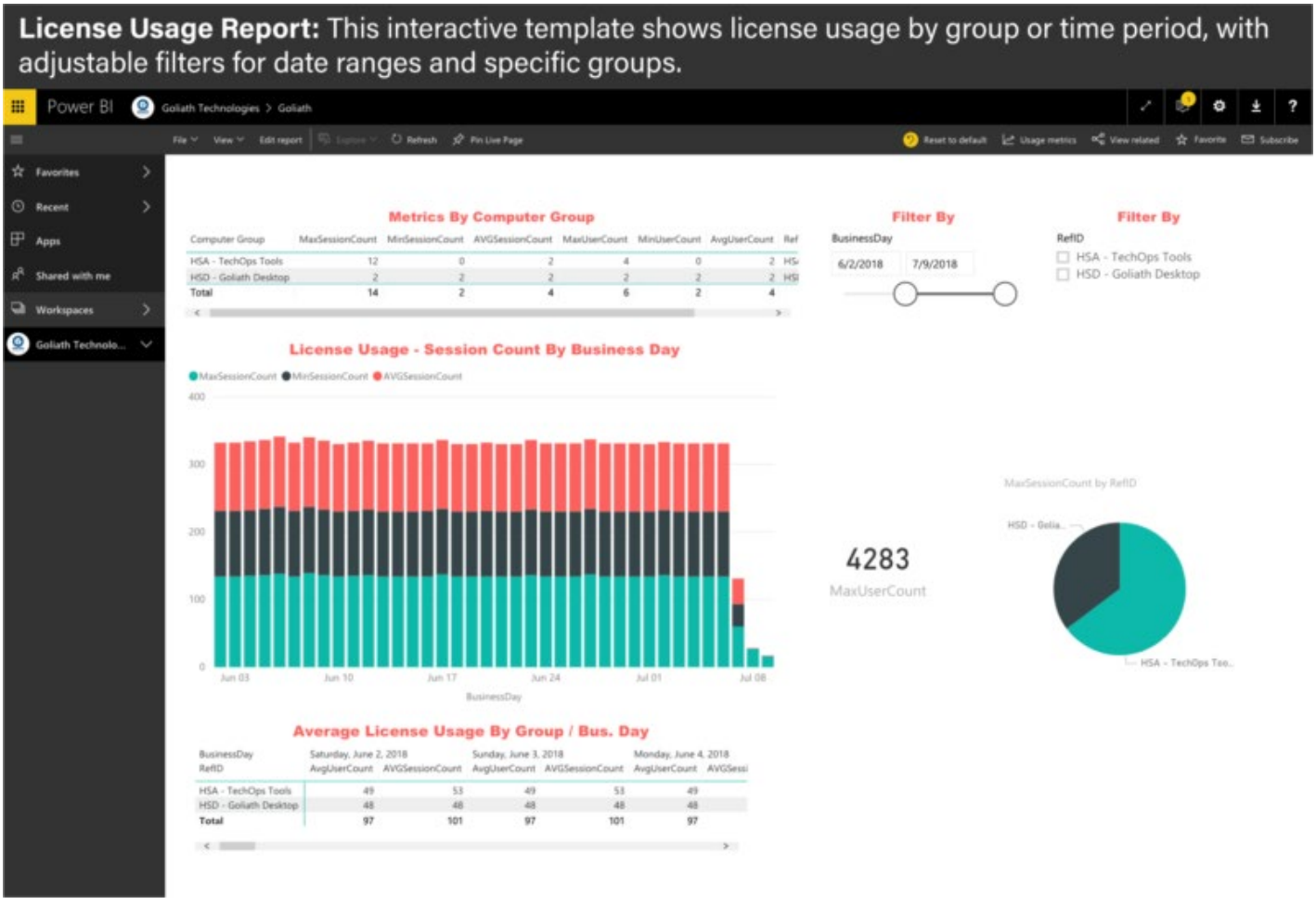
HOW TO USE: Run this report on a monthly basis or as required by management to show Citrix license utilization per farm/delivery group.

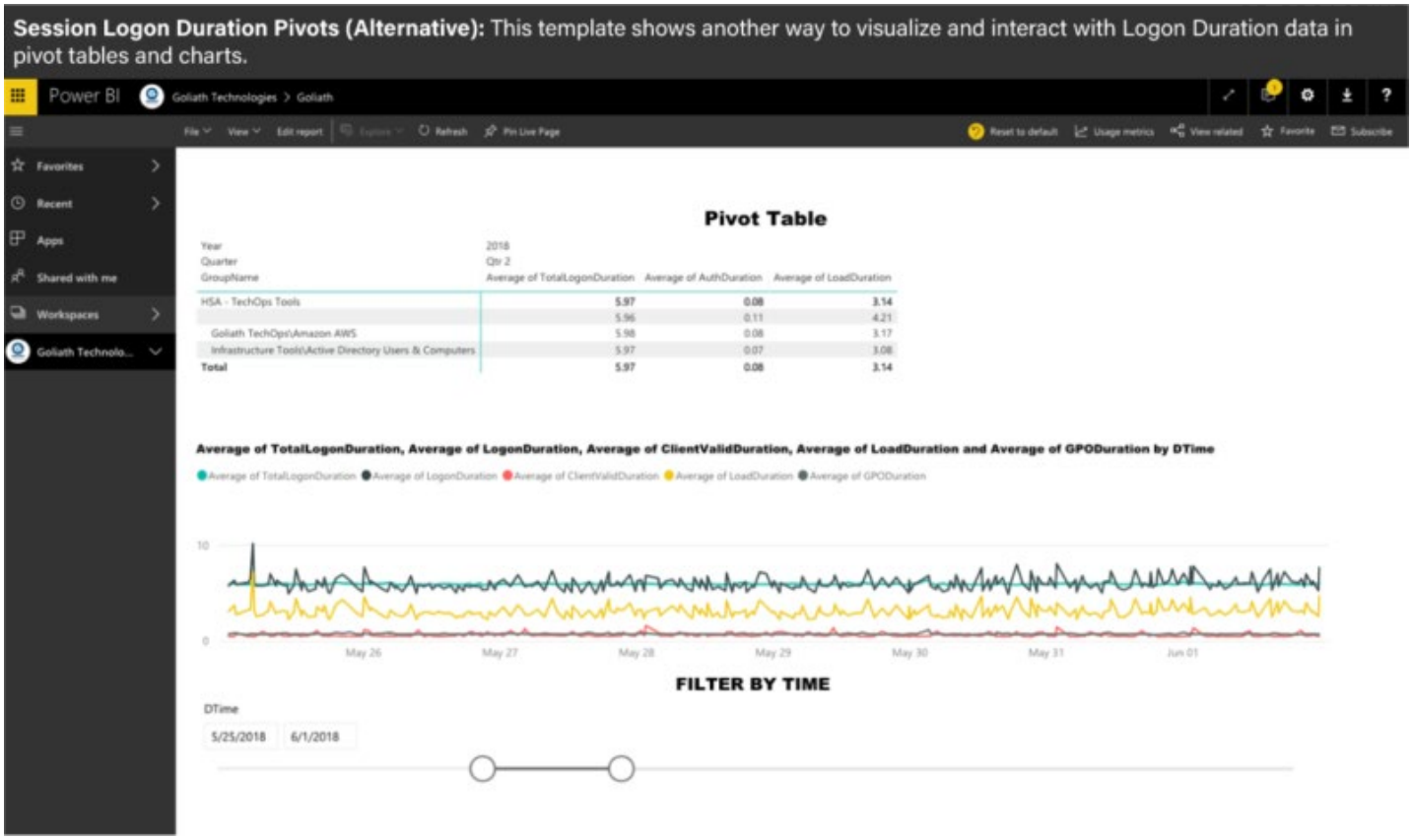
Advanced Reporting and Analytics Module

With Goliath Technologies new Advanced Reporting and Analytics Module, customers can now leverage third-party reporting platforms such as Microsoft Power BI, Microsoft Excel, and Tableau. Goliath Technologies offers several advanced reporting and analytics options:

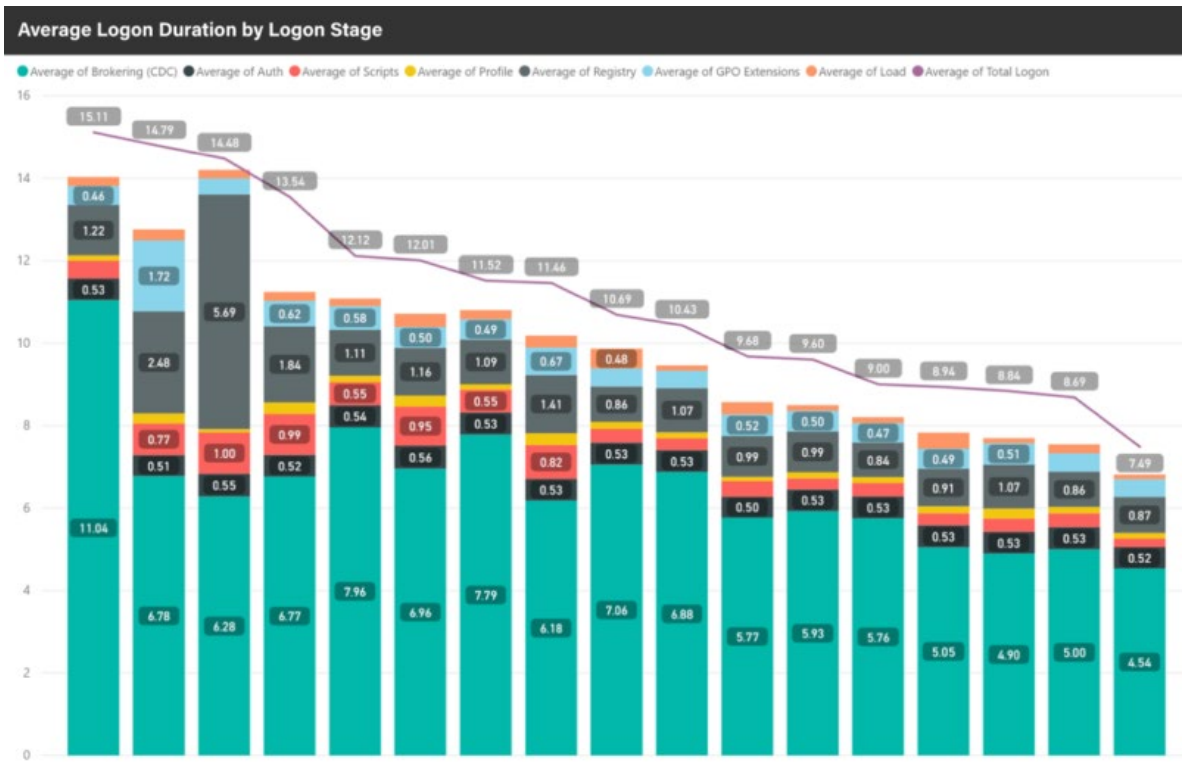
- **Microsoft Power BI Templates:** Goliath offers Microsoft Power BI templates with this module. These templates are included free for customers with active maintenance.
- **Template Design Services:** Goliath offers services to build custom templates at an average estimated additional cost of $1,500 per template.
- **Client Reports:** Users may develop their own reports and templates by accessing the SQL server database views and tables available in Goliath Performance Monitor 11.7.7.6 or later.

A Reference Guide is available to help you understand and define the key reporting elements as well as the additional tables that are exposed in the database.





Sample Custom Report in Microsoft Power BI:



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