



Modernizing End User Computing: Ensuring Client Software Update Resilience and Zero Trust Security with Goliath Performance Monitor

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Abstract: *This white paper explores the critical importance of maintaining up-to-date client software and implementing zero trust security principles within the context of the transformed IT landscape brought about by the pandemic. Drawing on years of troubleshooting Citrix infrastructures and the experience of well-known industry experts, it delves into the challenges and solutions at the intersection of client software updates, zero trust security, and the evolving IT paradigm. By highlighting real-world errors reported by end users and their impact on the end user experience, this paper underscores the need for a modern approach to software updates and security in the face of agile vendor practices, remote work, and the Modern Workplace architecture. Furthermore, this paper introduces Goliath's Performance Monitor as a valuable tool to gain insights into the Citrix Receiver and Workspace App versions used by end users, providing critical data for troubleshooting user experience degradation and uncovering correlations between outdated software and performance issues.*

Introduction: Navigating change in the IT landscape

The global pandemic catalyzed a seismic shift in the IT landscape, compelling organizations to rapidly adopt cloud services and accommodate remote work as they recalibrated their IT strategies. Amidst this transformation, maintaining up-to-date client software and implementing zero trust security emerged as imperative factors to ensure resilience and safeguard sensitive data. Where at the same time traditional IT practices based on ITIL frameworks struggled to align with agile methodologies, impeding innovation and lifecycle management.

Cloud services and altered vendor update cycles

The migration to cloud services precipitated a shift in vendor update cycles. Organizations found themselves grappling with discrepancies between server-side and client-side software updates. Where vendors rapidly embraced agile practices, accelerating software releases to address dynamic market demands, customers found it challenging to keep up with frequent updates.

These days agile vendor practices are outpacing client software update cycles more and more, leading to potential vulnerabilities and compatibility issues.

Agile adoption and ITIL challenges

Vendors' swift transition to agile methodologies for software delivery improved their responsiveness to customer needs. However, this transition accentuated the disparity between vendor practices and customers' adherence to ITIL processes for their daily operations. Organizations struggled to balance the demand for innovative software delivery with the need for stable and secure operations.

Bridging this gap requires not only a reevaluation of traditional IT practices in favor of more agile approaches that align with the new software development landscape, but also a mindset shift of IT operations to adapt that same agile approach to a modern workplace lifecycle management.

Remote workforce transformation and security considerations

As the workforce pivoted to remote operations due to the pandemic transforming traditional office users into remote workers, the client-side software environment took on new significance. Remote endpoints became potential attack vectors. Failing to update client software heightened security risks, as cyber adversaries capitalized on vulnerabilities within outdated applications.

Currently keeping client software up-to-date is even more vital to maintaining a secure and productive remote workforce.

The domino effect: impact of outdated Citrix client software

Often overlooked, supporting software applications like Citrix Receiver and the Citrix Workspace App play a pivotal role in shaping the user experience, directly impacting performance, security, and accessibility. Maintaining not only up-to-date business applications, but client software as

well has become more crucial than ever. The ramifications of overlooking this aspect ripple through the user experience landscape, leading to a series of cascading problems:

- **Slow Application Response Times:** when backwards compatibility is not in place for outdated Citrix client software it can lead to a mismatch in feature parity between the client-side and server-side software. Which in turn can result in a loss of performance and security improvements as the outdated software contributes to sluggish application launch times, hindering productivity and frustrating users who depend on swift access.
By monitoring the latency and performance metrics of user sessions in real time, IT teams can quickly identify which users are affected by slow response times due to outdated client software and take proactive steps to address the issue, whether it's updating the software or optimizing network configurations.
- **Reduced Application Performance:** failure to keep the Citrix client software up to date can lead to diminished session responsiveness as Citrix keeps updating the performance of the HDX protocol and network performance. Not keeping both the client-side and server-side software up-to-date can result in subpar user interactions within applications, undermining the efficiency of daily tasks.
By gathering data on CPU usage, memory consumption, network latency, and other performance metrics IT can analyze this data to pinpoint performance drops and reduced application responsiveness tied to outdated client software. This insight guides IT teams in making informed decisions about updating the software and optimizing performance.
- **Restricted from Using Applications:** compatibility issues between client software and server-side updates may restrict users' access to critical applications, as modern workplace management policies like Conditional Access and Compliancy can restrict connectivity and application access.
By capturing session details, including access attempts and application interactions, and correlating this data with client software versions, IT can quickly identify version mismatches causing access restrictions. This information empowers IT to prioritize software updates and ensure uninterrupted access to critical applications.
- **Distorted Images:** outdated client software can compromise graphical rendering, distorting images and visuals within graphic-intensive applications.
IT can use session recordings to analyze user experiences and identify distorted images or artifacts resulting from outdated graphical rendering components. This insight will help in addressing graphic-related issues by updating the client software.
- **Compatibility Issues Causing Crashes:** when client software isn't aligned with server-side updates, compatibility problems arise, leading to frequent application crashes and workflow disruptions.
Collecting data on user sessions, including application interactions and performance metrics leading up to crashes will help IT teams to identify patterns and correlations between application crashes and outdated software versions and prioritize software updates to address compatibility issues promptly.
- **Third-party Integrations Errors:** neglecting client software updates can break integrations with third-party tools, triggering errors and obstructing smooth workflow interactions.
By monitoring these third-party integrations, IT can identify errors that are the result of outdated client software disrupting third-party interactions. This data guides IT in swiftly intervening to restore smooth workflow interactions through software updates.
- **Security Vulnerabilities:** outdated software becomes vulnerable to cyber threats, compromising sensitive data and exposing organizations to security breaches.

Security teams can leverage anomaly detection capabilities of monitoring software to identify potential vulnerabilities arising from outdated software. This insight enables IT to proactively address security concerns through software updates and patches.

Strategies for Effective Client Software Update Management

To navigate this evolving landscape, organizations should adopt a multi-faceted approach to client software updates:

- **Agile Alignment:** transitioning from rigid ITIL practices to agile methods enables organizations to match the pace of software releases, ensuring timely updates.
- **Automated Deployment:** implementing automated software deployment minimizes manual intervention, reducing errors and ensuring consistent updates across endpoints.
- **Security-First Approach:** prioritize security by integrating continuous monitoring, vulnerability assessments, and timely patching into the update process.
- **User-Centric Communication:** transparent and user-friendly communication about software updates builds end-user trust and encourages compliance.

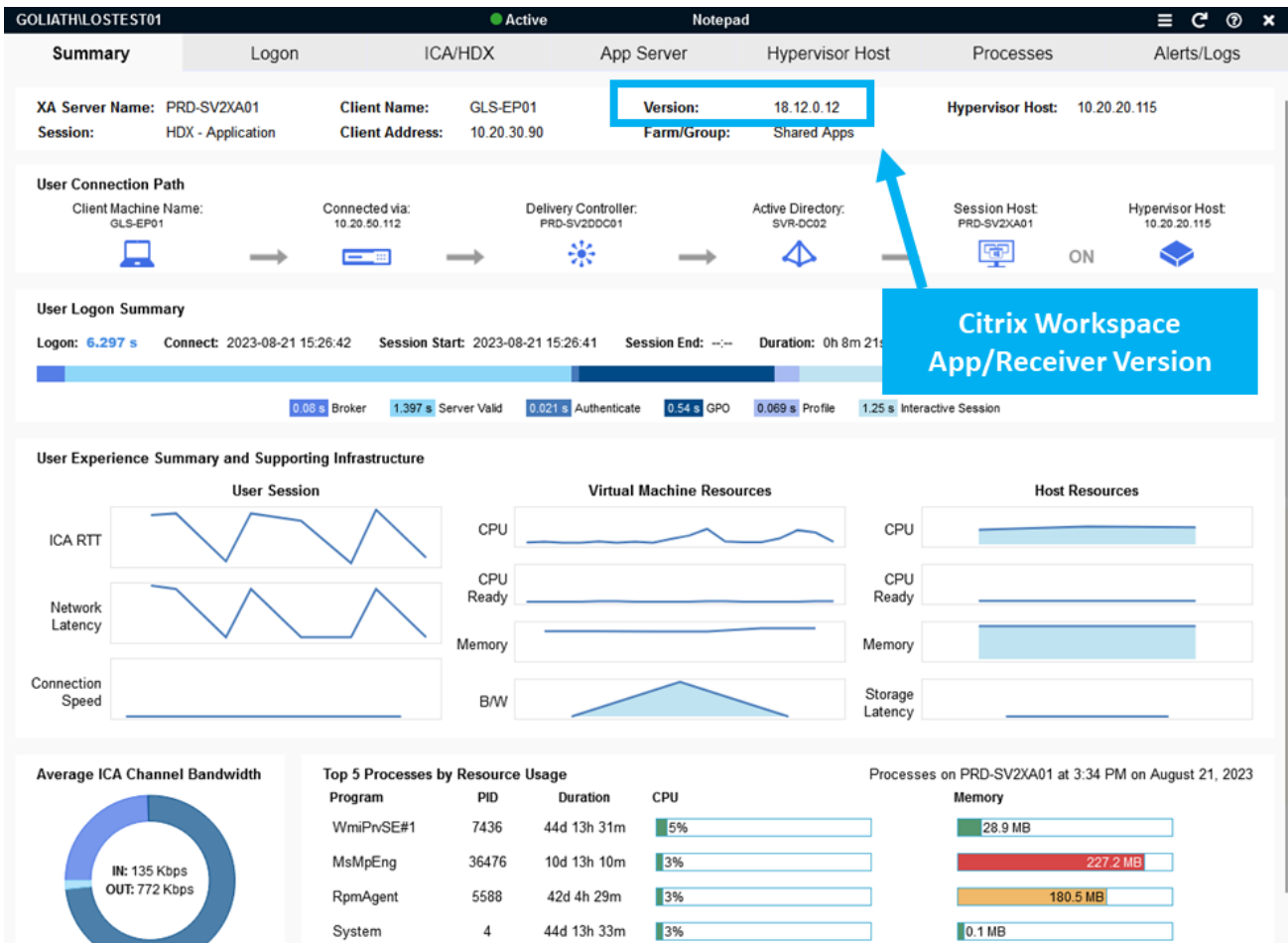
Utilizing Goliath Performance Monitor for insights and troubleshooting

To address these modern workplace challenges, Goliath Performance Monitor can be a powerful ally by not only providing visibility into Citrix Receiver and Workspace App versions used by end users, but providing end-to-end monitoring, and historical data analytics. It equips IT teams with essential data to troubleshoot user experience degradation. Goliath Performance Monitor facilitates the discovery of correlations between the usage of older Citrix client software versions and performance issues, enabling proactive intervention and optimization.

- View client version across your inventory: with Goliath Performance Monitor you can quickly check the Citrix Receiver and Workspace App versions used by your end users and plan remediation actions for outdated client software.

User	XA Server ...	Session	Session S...	Client Name	Cle...	Client Add...	Version	Logon	ICA Latency	Avg. ICA Late...	App Name	Delivery G...	Connecte...	Logoff/Dis...	Conne...
GOLIATHLOSTE	PRD-SV2XA01	HDX - Applic...	Active	GLS-EP01	Windows	10.20.30.90	18.12.0.12	6.3s	16ms	16ms	Notepad	Shared Apps	2023-08-21 ...		10.20.50...
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	15.2s					2023-08-21 ...	2023-08-21 ...	10.20.61.51
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	15s					2023-08-21 ...	2023-08-21 ...	10.20.61.50
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	14.2s					2023-08-21 ...	2023-08-21 ...	10.20.61.50
GOLIATHLOSTE	PRD-SV2XA01	HDX - Applic...	LoggedOff	GLS-EP01	Windows	10.20.30.90	18.12.0.12	11.8s					2023-08-21 ...	2023-08-21 ...	10.20.50...
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	14.7s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.51
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	14.8s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.50
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	14.1s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.51
GOLIATHLOSTE	PRD-SV2XA01	HDX - Applic...	LoggedOff	GLS-EP01	Windows	10.20.30.90	18.12.0.12	12.4s	1ms	2ms	Notepad, Co...	Shared Apps	2023-08-21 ...	2023-08-21 ...	10.20.50...
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	13.9s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.50
GOLIATHRoss E	DEVSVR-CT...	HDX - Desktop	LoggedOff	GPM-PRESA...	Windows	10.20.150.122	23.7.1.18	18.1s	0ms	0ms	Cloud Desktop	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.51
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	14s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.50
GOLIATHRoss E	DEVSVR-CT...	HDX - Desktop	LoggedOff	GPM-PRESA...	Windows	10.20.150.122	23.7.1.18	15.4s	0ms	0ms	Cloud Desktop	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.51
GOLIATHLOSTE	DEVSVR-CT...	HDX - Applic...	LoggedOff	GLS-EP05	Windows	10.20.100.35	23.7.1.18	15.3s	0ms	0ms	Paint	Citrix Cloud A...	2023-08-21 ...	2023-08-21 ...	10.20.61.51

- Deep end user experience telemetry correlated across the entire delivery infrastructure: Goliath Performance Monitor enables the correlation of client software versions and reduced performance by presenting this information in a single (summary) pane.



Citrix Workspace App/Receiver Version

Conclusion: forging ahead with resilience, security, and insight

The dynamic IT landscape necessitates a forward-looking approach that melds client software updates, zero trust security, and modern architectural paradigms. Organizations that proactively update client software and embed zero trust principles stand poised to thrive in an era defined by both innovation and unyielding security. Goliath Performance Monitor further empowers IT teams to leverage data-driven insights for enhanced troubleshooting and optimization.

Advanced reporting with detailed telemetry:

Citrix XenApp - XenApp Client Report

Citrix XenApp Client Report for Specified Period

Reporting Period: Thu Jul 27 2023 13:42:08 - Thu Aug 17 2023 13:42:08 | Sort By: Client Name | Report Run: Thu Aug 17 2023 13:42:08

Total Clients: 19 (55 records)

Client Name	Client Address	Client Version	Device Type	User Name	App Name	Record D/T
DEVSVR-CTXCLX01	10.20.01.00	23.7.0.15	Windows	Avi Lipp	GoliathSharedProduction	2023-08-15 11:40:12
GLS-EP01	10.20.30.90	18.12.0.12	Windows	LOSTEST01	Notepad	2023-07-27 19:56:13
GLS-EP01	10.20.30.90	18.12.0.12	Windows	LOSTEST01	Notepad, Confluence	2023-07-27 20:12:14
GLS-EP03	10.20.80.91	19.3.0.4	Windows	LOSTEST03	Notepad	2023-07-31 09:27:08

Citrix Workspace App/Receiver Version

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- Microsoft: [Understanding Microsoft's Digital Transformation](#)
- McKinsey & Company: [The future of remote work: An analysis of 2,000 tasks, 800 jobs, and 9 countries | McKinsey](#)
- Invensis Global Learning Services: [How to Combine the ITIL Best Practices with the Agile Mindset? \(invensislearning.com\)](https://invensislearning.com)
- Esther Barthel (CTP): [Boosting the End User Experience: Troubleshooting 'Citrix is Slow' with Goliath Performance Monitor | LinkedIn](#)
- George Spiers (CTP): [Goliath Technologies Delivers Unmatched Troubleshooting Capabilities in New Release – JGSpiers.com](#)

**To see Goliath
Performance Monitor in
action, you can get
started with a free trial or
request a demo**

