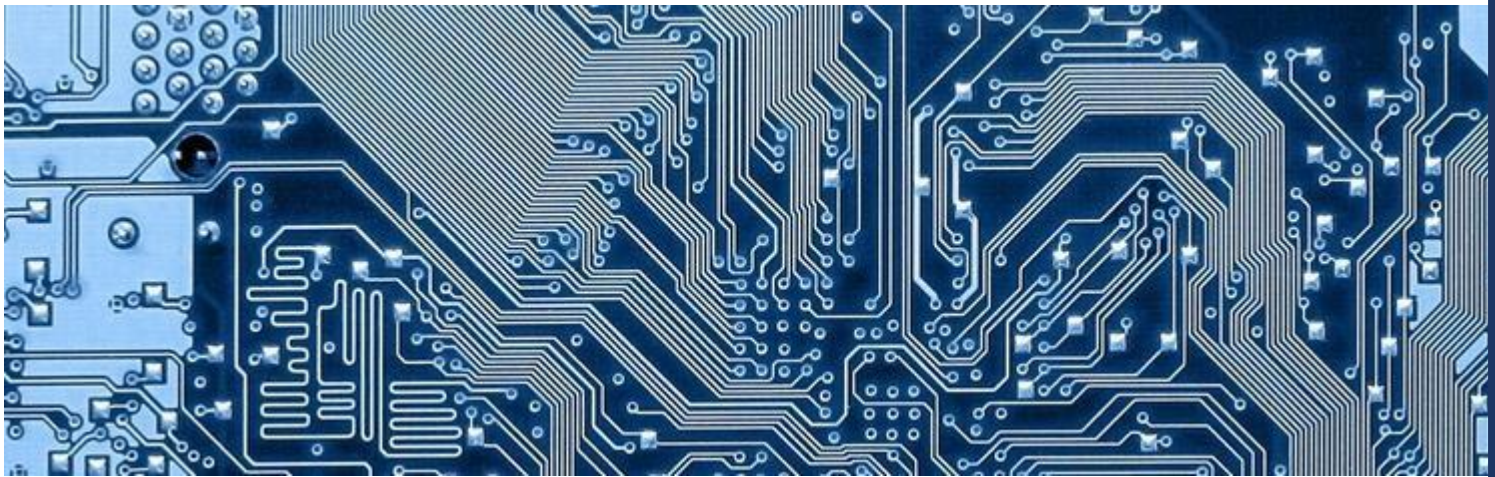# Complete Guide to Understanding The Citrix Logon Process

A Technical How-To Guide for Proactively Troubleshooting & Resolving Citrix Logon Issues

"This is a superbly technical document provided by Goliath to simplify and explain the many, complex steps composing the logon process. There is a lot to learn in this document for novices to experts alike."

Andrew Morgan
Independent End User Computing Consultant
Citrix CTP, VMware vExpert, VMware EUC Champion, & RES Software RSV

Table of Contents

I. Technical Summary

Troubleshooting and permanently resolving Citrix logon duration issues is an excruciating challenge for most Citrix Engineers. Unfortunately, obstacles to troubleshooting are further accentuated by the fact that many tools on the market are either ill-equipped to provide the level of detail necessary to determine root cause, or simply provide inaccurate metrics based on flawed calculation methodology.

For instance, many products advertising that they provide logon duration present values for each stage of the logon process that neatly break down and add up to the sum of overall logon time. On the surface this seems to make sense intuitively, but is actually completely inaccurate. The Logon Duration in a Citrix environment is famously intricate, with many of the stages occurring simultaneously and overlapping – meaning that the total logon time will almost never equal the sum of its parts. In fact, there are 33 stages in the overall logon process just to get a user session brokered to its session host.

This guide will review the complexities of the Citrix logon process, how it actually works, and the explicit micro stages of the logon process. Then we will discuss how Citrix Administrators use this level of detail to pinpoint root cause of logon duration issues, and how they use a combination of technology and analysis to troubleshoot and resolve these performance issues for end users.

II. What is the Citrix Logon Process?

While the Citrix logon process (when configured correctly) may only take a couple seconds to launch, its execution comprises a complicated sequence involving the Citrix Receiver, Citrix Brokering Architecture/NetScaler, StoreFront,

Delivery Controller, and the Session Host/App Server, or VDI. Before we begin understanding how to identify the root cause of a logon duration issue, we need to first understand at a high level what actually occurs, and in what sequence, during the logon duration process. The diagram below presents the sequence of events that occur during the logon process from the time when a user clicks on the icon for an app or desktop, to when it fully launches:
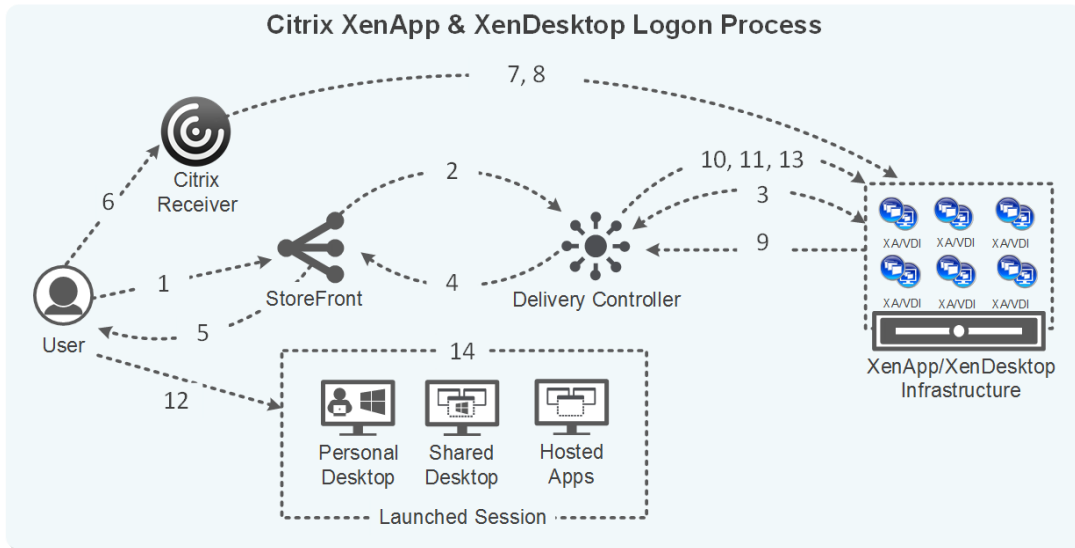
A. Description

As you can see, there is no straight line in this process marching neatly forward towards the launched desktop. Instead, the process takes a series of steps back and forth from the user's end point to the session host before the user ends up seeing their desktop and application.

To better understand what is happening at each stage, you can map the process step to what's happening by referencing each line below to its step in the diagram above:

1. **End user clicks on a desktop or application (in this example, StoreFront) to launch it**
2. **Storefront requests a session host from the Delivery Controller**
3. **Delivery Controller selects a session host**
4. **Delivery Controller sends session host hostname & IP address to Storefront**
5. **Storefront creates the ICA File and sends it to Citrix Receiver**
6. **Citrix Receiver launches the ICA file**
7. **Citrix Receiver determines and then checks that the connection to the session host can be established**
8. **Citrix Receiver establishes an ICA connection to the session host**
9. **Delivery Controller creates a user session**
10. **Delivery Controller processes Citrix policies**
11. **Session is brokered by the Delivery Controller to the session host**
12. **User Authentication between domain controller and session host**
13. **End User sees the Citrix session window open and the Windows welcome screen**
14. **Profile Load, Group Polices (GPO) and script execution take place**
15. **Application/Desktop is fully launched**

The fact that this process can be achieved in less than 10 seconds is quite amazing, and in this document we're going to show you how to perform an autopsy on a user's poor logon process to identify why that happened.

III.   Logon Duration Stages

In order to understand exactly what is happening and troubleshoot, we need to break out the sequence to each of the executions that Citrix is processing during the logon process. This is functionally categorized into three different aspects of the logon process – the brokering process that the Delivery Controller facilitates, Citrix Receiver's process to establish the ICA Connection, and desktop load process for the application or desktop on the session host.

Combining in-depth Citrix data and Windows OS logging data, the Logon tab breaks down the user's login from start to finish, providing the administrator with actionable metrics to reduce troubleshooting times.

The Logon tab is comprised of four main sections displaying a wide variety of data to assist in diagnosing slow logon times. Each of the logon stages is presented with easy to identify graphs to quickly see where the majority of time is spent in the process, saving you time in getting to the root cause of potential problems.

Figure 1 - Session dialog - the Logon tab at a glance
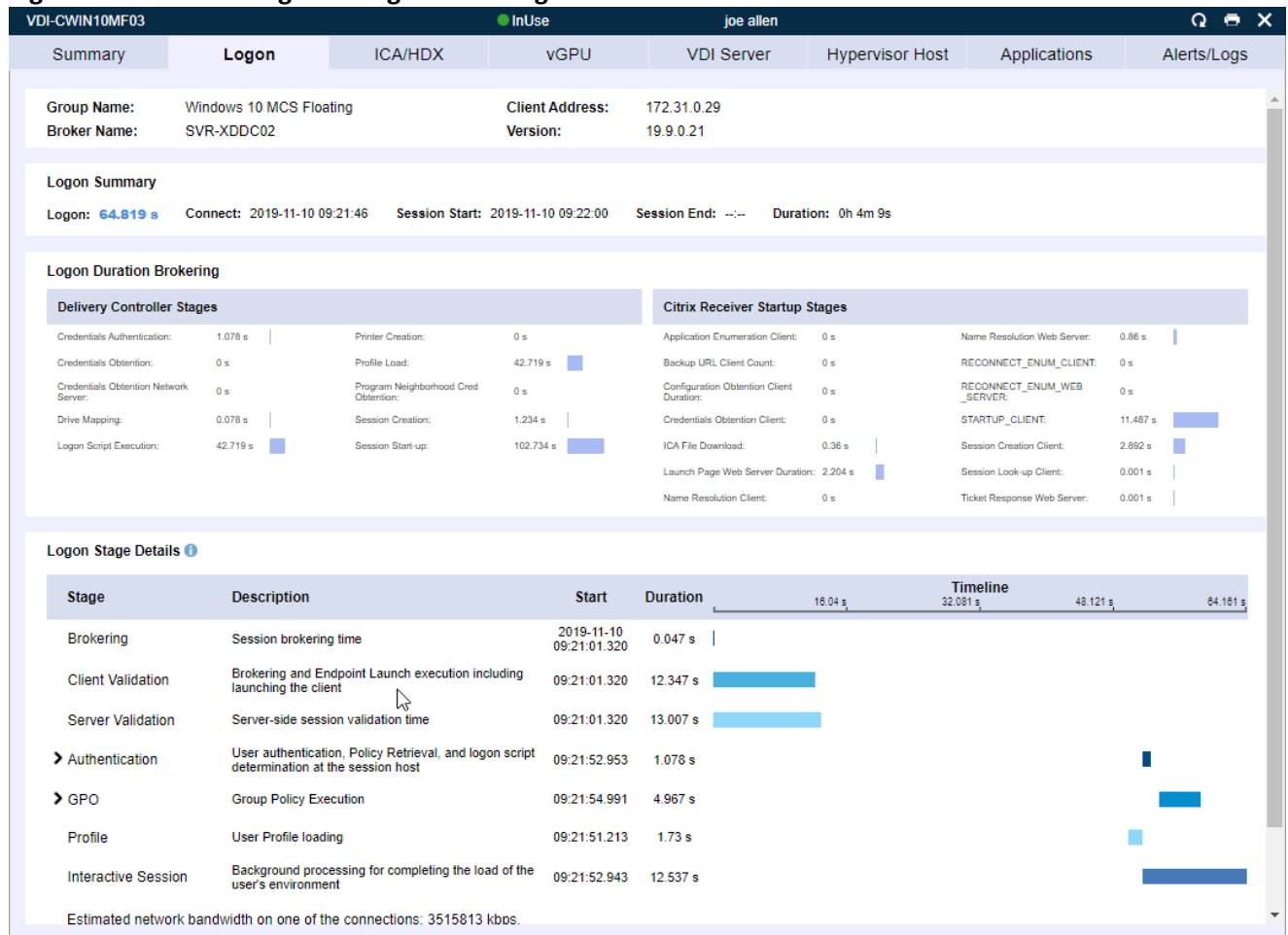
From the top of the dialog, the first section presents general session information. This information will differ if you're reviewing a Published app or desktop session versus a Virtual Desktop. The example in Figure 2, below, displays a Virtual Desktop session, which includes the Delivery Group name, the endpoints IP address, the Citrix broker responsible for the connection and the version of Citrix Receiver\Workspace the endpoint has installed.

Figure 1.a - Virtual Desktop session information

| Group Name: | Windows 10 MCS Floating | Client Address: | 172.31.0.29 |
| Broker Name: | SVR-XDDC02 | Version: | 19.9.0.21 |

The next area is a Logon summary where you can find actual logon duration time as well as session start, duration, and end time if applicable.

Figure 1.b - Logon summary

Logon Summary

Logon: **64.819 s**   Connect: 2019-11-10 09:21:46   Session Start: 2019-11-10 09:22:00   Session End: --:--   Duration: 0h 4m 9s

A. Logon Duration Brokering Stages

The middle section of the Logon tab displays the logon duration brokering stage data for both the delivery controller and the Citrix Receiver startup stages.

B. Delivery Controller Stages

Figure 1.c - Delivery Controller Stages

Delivery Controller Stages

Credentials Authentication:	1.078 s	Printer Creation:	0 s
Credentials Obtention:	0 s	Profile Load:	42.719 s
Credentials Obtention Network Server:	0 s	Program Neighborhood Cred Obtention:	0 s
Drive Mapping:	0.078 s	Session Creation:	1.234 s
Logon Script Execution:	42.719 s	Session Start-up:	102.734 s

- **Credentials Authentication:**
    - The time spent on the server authenticating the user credentials against Active Directory.

    Tip: A slow authentication stage may indicate an improper site configuration. An example would be if your user is logging into a data center in one location and is being authenticated by a domain controller in another physical location. Another point to consider would be a site DNS issue.

- **Credentials Obtention:**
    - The time taken for credentials to be passed through to the server.
- **Credentials Obtention Network Server:**
    - Network credential retrieval for passthrough authentication.
- **Drive Mapping:**
    - Client passthrough drives, port and device mapping.

    Tip: Create policies to disable unnecessary ports, drives and devices.

- **Login Script Execution:**
    - Time spent executing user login scripts.

    Tip: Find scripts executed by the user and manually run them to observe how long they take to execute and observe failures in execution that may cause delays.

- **Printer Creation:**
  - The time spent mapping the user's client printers.
- **Profile Load:**
  - The time spent loading the user's profile.

    Tip: *Check the size of the user's roaming profile. Find large folders and work on creating policies to reduce the number of folders and files included in the profile.*

- **Program Neighborhood Cred Obtention:**
  - The time needed for the server to cause the Program Neighborhood instance running on the client to obtain the user credentials.
- **Session Creation:**
  - The time the server spends creating the session.
- **Session Startup:**
  - This is the high-level server-side connection start-up metric that encompasses the time XenDesktop takes to perform the entire start-up operation. When an application starts in a shared session, this metric is normally much smaller than when starting a new session, which involves potentially high cost tasks such as profile loading and login script execution.

C. Citrix Receiver Startup Stages

Figure 1.c - Citrix Receiver Startup Stages

Citrix Receiver Startup Stages			
Application Enumeration Client:	0 s	Name Resolution Web Server:	0.86 s
Backup URL Client Count:	0 s	RECONNECT_ENUM_CLIENT:	0 s
Configuration Obtention Client Duration:	0 s	RECONNECT_ENUM_WEB _SERVER:	0 s
Credentials Obtention Client:	0 s	STARTUP_CLIENT:	11.487 s
ICA File Download:	0.36 s	Session Creation Client:	2.892 s
Launch Page Web Server Duration:	2.204 s	Session Look-up Client:	0.001 s
Name Resolution Client:	0 s	Ticket Response Web Server:	0.001 s

- **Application Enumeration Client:**
  - Application enumeration is one of the issues slowing down session start times.
- **Backup URL Client Count:**
  - If this metric has a value higher than 1, it indicates the Web Interface server is unavailable and the Citrix Receiver is attempting to connect to back-up Web Interface servers to launch the application.
- **Configuration Obtention Client Duration:**
  - The time it takes to get the configuration file from the XML server
- **Credentials Obtention Client:**
  - The time it takes to obtain user credentials when the user credentials are manually entered by the user.
- **ICA File Download:**
  - The time it takes for the client to download the ICA file from the server.
- **Launch Page Web Server Duration:**
  - Review the information for IFDCD. The LPWD metric is only used when Web Interface is the application launch mechanism.

- **Name Resolution Client:**
  - This metric is collected when a client device directly queries the XML Broker to retrieve published application information stored in IMA (for example, when using Program Neighborhood or a Custom ICA Connection). NRCD is only gathered for new sessions since session sharing occurs during startup if a session already exists.

    Tip: When the Name Resolution Client metric is high, it indicates the XML Broker is taking a lot of time to resolve the name of a published application to an IP address. Possible causes include a problem on the client, issues with the XML Broker, such as the XML Broker being overloaded, a problem with the network link between the two, or a problem in IMA. Begin by evaluating traffic on the network and the XML Broker.

- **Name Resolution Web Server:**
  - When this metric is high, there could be an issue with the Web Interface server or the XenApp plugin site (formerly known as the Neighborhood Agent site), the XML Service, the network link between the two, or a problem in IMA.

    Tip: Like Name Resolution Client, this metric indicates how long it takes the XML service to resolve the name of a published application to a XenApp IP address. However, this metric is collected when a Web Interface site is performing this process on behalf of a launch request it has received from either the XenApp plugin (previously known as Program Neighborhood Agent) or from a user clicking a Web Interface page icon. This metric applies to all sessions launched through the Web Interface or the Citrix Online Plugin (formerly, the Program Neighborhood Agent).

- **Reconnect Enum Client:**
  - The time spent for the user's client to get a list of reconnectable sessions.
- **Reconnect Enum Web Server:**
  - The time it takes the Web Interface to get the list of reconnections for this user from the XML service.
- **Session Creation Client:**
  - The time it takes to create a new session, from the moment wfica32.exe is launched to when the connection is established.
- **Session Lookup Client:**
  - The time it takes to query every session to host the requested published application.
- **Ticket Response Web Server:**
  - The time it takes to get a ticket from the STA server or XML service.

  Tip: This can indicate that the Secure Ticket Authority server is overloaded.

D. Logon Stage Details

The Logon Stage Details section of the Logon tab is unique to Goliath Performance Monitor. It presents a granular breakdown of the login process by combining all of the above metrics with information included in the Goliath logs. This approach saves time and testing efforts by highlighting specific details during the login process that an administrator would normally have to dig through logs and other areas to obtain.

Figure 5: Logon Stage Details
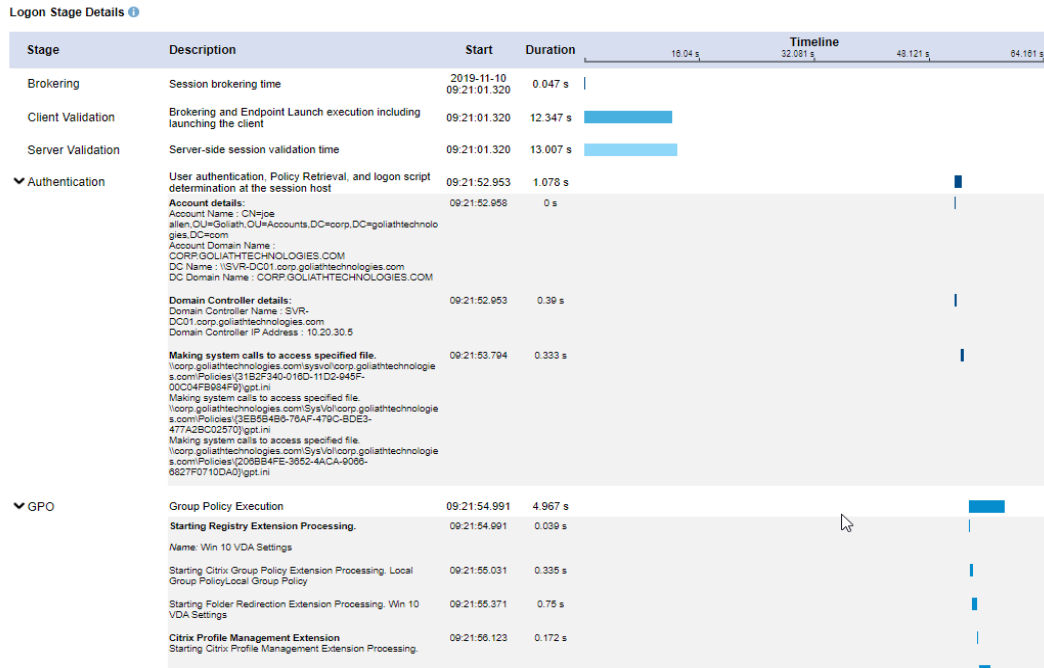
As seen in the image above, some of the stages of the logon process can be expanded to drill in to specifics about the individual logon stage process.

The **Authentication** section is key to determining which domain controller processed the login as well as the time it took to read group policy objects. One of the key metrics here are is the domain controller's location. An improper site configuration could have a client authenticating through a domain controller not local to the client. Another key metric would be the client's ability to read the Group Policy file and how long that read takes.

The **GPO** section displays the amount of time to process each group policy. Long GPO processing could indicate invalid printer mapping and network drive mapping.

In summary, Goliath Performance Monitor's Logon tab provides administrators with a unique view into the login process by combining data from Citrix as well as Windows log information to assist in troubleshooting slow logons and getting to root cause much faster.

IV. Correlate Stages to Logon Process

So how does this all fit together? Because of the overlap of each stage during the logon process, it is necessary to understand how the logon process breaks down and layers together. The stages we have covered and how they interrelate with each other is depicted in the image below, and the stages indicated match back to what you see above.

When troubleshooting logon times affecting the first two phases especially, this diagram should be used as a primer to understand how a phase that took an extended period of time fits into the rest of the process, and the server responsible for the slowness

Stages	Step A	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
BUCC	BUCC															
AECD	AECD															
LPWD	LPWD															
SCCD							SCCD									
CFDCD		CFDCD														
TRWD			TRWD													
COCD				COCD												
RECD				RECD												
REWD				REWD												
IFDCD						IFDCD										
SCD									SCD							
NRCD								NRCD								
NRWD								NRWD								
SLCD									SLCD							
PNCOSD								PNCOSD								
SCSD									SCSD							
SSSD												SSSD				
CONSD												CONSD				
COSD												COSD				
CASD													CASD			
LSESD														LSESD		
PLSD														PLSD		
DMSD															DMSD	
PCSD															PCSD	

V. How to Use It

When working with individuals who administer/support/manage Citrix environments, it has become the general understanding that logon issues typically are found to manifest in one of two ways:

Isolated Users: Logon slowness which only impacts isolated users or location.
Entire User Base: Where the slowness impacts a larger subset of the user base, or possibly the entire user base.

In order to better determine the root cause for each of these situations, we typically recommend following a troubleshooting process which caters to the scenario at hand. By doing so, you provide yourself with the means to not only gain visibility into the issue, but you will also allow yourself the best opportunity for objective evidence, which you'll need for root cause analysis.

Below are some examples on how a Citrix Engineer/Administrator would be able to utilize a monitoring solution to troubleshoot longer than normal logon durations. We will break these into the two scenarios as mentioned above (individual user vs entire user base.)

A. How to Troubleshoot Isolated User Logon Duration Slowness:

Awareness:

a. The biggest challenge in the case of individual user logon slowness is knowing when the problem is occurring. To do so, you need to have alerts so you're not waiting to hear from the end user. The first step is to configure alerts so you know when and how often the logons take longer than the acceptable duration for your environment. Once you configure the rule, you would then need to apply that threshold to your entire user base. Goliath Performance Monitor will allow you to set a custom threshold if, for example, the logon duration exceeded 1 minute or 90 seconds for a user. It will then automatically send a notification by email, text message, or via your enterprise monitoring solution.

b. Secondly, we will want to schedule one of the 66 out-of-the-box reports available within the technology which can provide a historical view of the logon durations for your user base. We would typically recommend that this report is sorted by the logon duration time, and in ascending order so that you are able to view the highest logon durations at the top of your report. If you set the report to run on a daily basis, for example, every morning at 10 AM, you will have a report listing out the logon durations for your entire user base prepared for your review. Goliath Performance Monitor provides this type of

reporting, and will also allow you to report on a subset (such as the top 20 logon durations) of users, as well as break down / drill into each specific user's logon process to determine the exact timings for each step of their logon process. This is beneficial when determining root cause for logon duration slowness issues.

Troubleshooting Process:

a. Assuming you've configured the alert notifications surrounding logon duration times, you may have received an alert already, or a ticket or call may have been escalated to the Citrix support team.

b. Navigate to the Citrix Virtual Apps & Desktops display, where you can then search for the user and bring up their session details, including the breakdown of the user's logon process.

c. Drill into the user's logon duration breakdown.

d. Identify the root cause of the user's logon duration slowness. This typically will either originate from the server side or the client side, but rarely both.

Logon Stage Details ⓘ

Stage	Description	Start	Duration	Timeline
				8.142 s 16.284 s 24.426 s 32.568 s
Brokering	Session brokering time	2019-12-03 14:12:29.433	0.017 s	|
Client Validation	Brokering and Endpoint Launch execution including launching the client	14:12:29.433	3.74 s	▅
Server Validation	Server-side session validation time	14:12:29.433	3.727 s	▅
HDX	HDX connection from client to VM	14:12:30.723	2.28 s	▅
❯ Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	14:12:49.248	0.125 s	|
❮ GPO	Group Policy Execution	14:12:51.601	5.43 s	▅▅
	Starting Registry Extension Processing. *Name:* Local Group Policy	14:12:51.601	2.631 s	▅
	Starting Citrix Group Policy Extension Processing. Local Group Policy[S24] Site Policies - AGIICTXPROD-DCECTX XA71 - User	14:12:52.429	0.168 s	|
	Starting Folder Redirection Extension Processing. [S24] CTX - Redirection-DCE_V3	14:12:52.604	0.291 s	|
	Citrix Profile Management Extension Starting Citrix Profile Management Extension Processing.	14:12:52.905	0.016 s	|
	Starting Internet Explorer Zonemapping Extension Processing. CTX - Internet Explorer 10	14:12:52.989	0.062 s	|
	Group Policy Drive Maps Extension Starting Group Policy Drive Maps Extension Processing. *Name:* CTX XA71 - User Tuning	14:12:53.091	0.202 s	|
	Starting Group Policy Folders Extension Processing. [S24] CTX - Profile Management-DCE_V3	14:12:53.348	0.117 s	|
	Starting Group Policy Folder Options Extension Processing.	14:12:53.488	0.071 s	|
	Group Policy Scheduled Tasks Extension Starting Group Policy Scheduled Tasks Extension Processing. *Name:* CTX - Adobe Default	14:12:53.576	0.172 s	|

e. Once you identify the root cause of the issue, take action toward mitigating the issue (update / remove broken logon scripts, resolve incorrect drive mappings, or if client side, provide recommendations to user on why they may be experiencing latency on their connection, etc.

Configure an automated report which will track the user's logons for a week. This will allow you to easily view the report and verify whether this user is still experiencing any logon duration slowness now that you've taken the appropriate actions.

B.   **How to Troubleshoot Entire User Base Logon Duration Slowness:**

Awareness:

a. While this scenario sometimes provides a quicker/easier way to gain visibility into the root cause and resolve an issue, it also means that you have an issue impacting the entire organization. (All eyes are on you!) In this instance we will want to focus on configuring a report which can be sorted by the logon duration time. Once configured, we can see our entire user base and their logon durations sorted from highest to lowest.

b. We can then spot check a sample group of users, which should help us in determining which stage the latency is occurring at, and at which point the high logon duration times are oriented for the users. Within Goliath Performance Monitor, you would then want to run a report which is sorted by stage to confirm the stage at which the problem is occurring.

Troubleshooting Process:

a. Now that we are aware of the stage at which the issues are occurring across the user base, we can begin to troubleshoot the root cause of the problem. By viewing the logon duration report, we can now drill down into users' sessions and analyze exactly what activity is taking place. Based on your findings from the report which was sorted by stage, you should already know which logon stage you need to identify the issue in.

Report on Citrix XenApp & XenDesktop Logon Duration breakdown for real and simulated end users

b. Once you locate the exact problem, for example, there was a logon script which wasn't necessary, you can then make the appropriate adjustments which will fix the issue and remove the problematic logon script.

c. Using a test account configured with the same baseline as your typical user would be, apply the fix to your test user, and launch a few test sessions. Once you have launched a few sessions, you can then use the XA / XD session display within Goliath Performance Monitor to confirm the fix has worked as expected, and the issue is in fact resolved.

d. Once resolution is tested and confirmed, you can apply the fix to the remainder of your user base so the issues they have been experiencing will be fixed.

e. To confirm the issue doesn't persist after the fix has been implemented, we would then recommend configuring a daily report which runs every morning (perhaps at 9 AM, so you can review while having your second cup of coffee.) This report will allow you to easily track and verify that the issue has been resolved over the course of the days following the aforementioned fix being implemented.

VI. Use Cases – How Goliath Customers Use the Technology

In working with customers and helping them troubleshoot logon slowness, we have seen a number of different ways in which slowness manifests. The following use cases illustrate the most common ones we have seen customers encounter, and include how they used Goliath Performance Monitor to resolve their condition.

1. Logon Slowness due to Drive Mapping Execution

Issue:
A global retailer's end users were experiencing logon times exceeding 5 minutes. Prior to using Goliath Technologies logon duration breakdown, they had been investigating, and attempting to manually find the root cause of this issue.

The process which the retailer's system engineers used was to first schedule a time with the end user(s) experiencing the problem, and they would conduct a remote session and attempt to manually time each stage of a user's logon as they watched the user log in. This troubleshooting process wasn't very successful, and the issues persisted for nearly eight months.

Resolution:
Once the Goliath Performance Monitor was implemented into their XenApp environment, the team of engineers was able to easily gain the visibility into the root cause of the issue in real time, using the Logon Duration report. By drilling into sessions for users complaining of the slow logon process, they were able to determine the issue was actually due to drive mapping (logon) scripts.

These scripts were, in turn, mapping 30+ errant drives to the user's profile. The retailer's engineers were able to reduce the number of logon scripts down to a single script, and removed the problematic as well as incorrectly linked GPOs. In the end, by determining the root cause and applying the aforementioned actions in their environment, the system engineers were able to reduce logon times down to an average of 45 seconds.

User 1 — InUse — VDI-CWIN10MF03

Summary | Logon | ICA/HDX | vGPU | VDI Server | Hypervisor Host | Apps/Processes | Alerts/Logs

Group Name: Windows 10 MCS Floating Client Address: 10.20.67.99 Hypervisor Host: 10.20.20.104
Broker Name: SVR-XDDC01 Version: 19.9.0.21

Logon Summary

Logon: 288.4 s Connect: 2019-11-27 13:03:32 Session Start: 2019-11-27 13:04:05 Session End: --:-- Duration: 0h 2m 1s

Logon Duration Brokering

Delivery Controller Stages			
Credentials Authentication:	0.39 s	Printer Creation:	0 s
Credentials Obtention:	0 s	Profile Load:	180.2 s
Credentials Obtention Network Server:	0 s	Program Neighborhood Cred Obtention:	0 s
Drive Mapping:	0.422 s	Session Creation:	1.046 s
Logon Script Execution:	30.329 s	Session Start-up:	12.7 s

Citrix Receiver Startup Stages			
Application Enumeration Client:	0 s	Name Resolution Web Server:	0.907 s
Backup URL Client Count:	0 s	RECONNECT_ENUM_CLIENT:	0 s
Configuration Obtention Client Duration:	0 s	RECONNECT_ENUM_WEB _SERVER:	0 s
Credentials Obtention Client:	0 s	STARTUP_CLIENT:	17.167 s
ICA File Download:	0 s	Session Creation Client:	3.518 s
Launch Page Web Server Duration:	1.938 s	Session Look-up Client:	0.001 s
Name Resolution Client:	0 s	Ticket Response Web Server:	0.001 s

Logon Stage Details

Stage	Description	Start	Duration	Timeline
Brokering	Session brokering time	2019-11-27 13:03:13.303	0.617 s	
Client Validation	Brokering and Endpoint Launch execution including launching the client	13:03:13.303	19.674 s	
Server Validation	Server-side session validation time	13:03:13.303	19.81 s	
> Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	13:03:52.367	0 s	
> GPO	Group Policy Execution	13:03:53.966	190.2 s	
Profile	User Profile loading	13:03:37.253	15.107 s	
	Background processing for completing the load of the			

Stage	Description	Start	Duration	Timeline
Brokering	Session brokering time	2019-11-27 13:03:13.303	0.617 s	
Client Validation	Brokering and Endpoint Launch execution including launching the client	13:03:13.303	19.674 s	
Server Validation	Server-side session validation time	13:03:13.303	19.81 s	
> Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	13:03:52.367	0 s	
∨ GPO	Group Policy Execution	13:03:53.966	11.66 s	
	Starting Registry Extension Processing.	13:03:53.966	0.078 s	
	Name: Win 10 VDA Settings			
	Starting Citrix Group Policy Extension Processing. Local Group PolicyLocal Group Policy	13:03:54.045	0.314 s	
	Starting Folder Redirection Extension Processing. Win 10 VDA Settings	13:03:54.364	9.083 s	
	Citrix Profile Management Extension Starting Citrix Profile Management Extension Processing.	13:04:03.450	0.078 s	
	Group Policy Drive Maps Extension Starting Group Policy Drive Maps Extension Processing. *Name:* VDI Drive Mappings	13:04:03.535	180.6 s	
	List of applicable Group Policy objects:			
	Name: Local Group			
	The following Group Policy objects were not applicable because they were filtered out :			
Profile	User Profile loading	13:03:37.253	15.107 s	
Interactive Session	Background processing for completing the load of the user's environment	13:03:52.360	15.443 s	

Estimated network bandwidth on one of the connections: 28470427 kbps.

A fast link was detected. The Estimated bandwidth is 227763 kbps. The slow link threshold is 500 kbps.

2. **AD Group Membership/Logon Script/Registry Extension Mappings Causing Logon Slowness**

Issue:
A leading law firm based out of New York City, was experiencing logon duration problems impacting the end user performance for their remote workforce of attorneys. Without the visibility into what actually was the root cause of the issue, the law firm's system administrators found themselves playing pin the tail on the donkey, and not knowing where to begin.

Resolution:
Once the Goliath Performance Monitor was installed in their environment, the systems administrators were able to leverage the logon duration report, drill down into a the logon duration breakdown for a few spot checked users, and determined that there were logon scripts being applied to incorrect user groups.

The users in these respective AD groups didn't require, or have access to applications which the respective logon scripts had been attempting to map. Additional registry extensions were also being applied to the user groups which was extending the logon duration. By removing the keys for the users who didn't require this access, logon duration times were lower ed by more than 40 seconds.

Summary   **Logon**   **ICA/HDX**   **vGPU**   **VDI Server**   **Hypervisor Host**   **Apps/Processes**   **Alerts/Logs**

Stage	Description	Start	Duration	Timeline
				20 s 40 s 60 s 83 s
Brokering	Session brokering time	2019-11-27 13:03:13.303	0.617 s	
Client Validation	Brokering and Endpoint Launch execution including launching the client	13:03:13.303	3.45 s	
Server Validation	Server-side session validation time	13:03:13.303	5.45 s	
❯ Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	13:03:52.367	0 s	
❮ GPO	Group Policy Execution	13:03:53.966	46.8 s	
	Starting Registry Extension Processing.	13:03:53.966	12.8 s	
	Name: Win 10 VDA Settings			
	Starting Citrix Group Policy Extension Processing. Local Group PolicyLocal Group Policy	13:03:54.045	0.314 s	
	Starting Folder Redirection Extension Processing. Win 10 VDA Settings	13:03:54.364	9.083 s	
	Citrix Profile Management Extension Starting Citrix Profile Management Extension Processing.	13:04:03.450	0.078 s	
	Group Policy Drive Maps Extension Starting Group Policy Drive Maps Extension Processing. *Name:* VDI Drive Mappings	13:04:03.535	0.469 s	
	Scripting Extensions	13:04:04.646	30.9 s	
	The following Group Policy objects were not applicable because they were filtered out :			
Profile	User Profile loading	13:03:37.253	0.44 s	
Interactive Session	Background processing for completing the load of the user's environment	13:03:52.360	15.443 s	

Estimated network bandwidth on one of the connections: 28470427 kbps.

A fast link was detected. The Estimated bandwidth is 227763 kbps. The slow link threshold is 500 kbps.

3. **Print Driver Support and Missing Print Drivers Causing Long Logons**

Issue:
An engineering firm with an expansive remote work force utilizing XenApp/XenDesktop had an increasingly high number of users complaining of long logon times. While inconsistent, the logon duration times were directly impacting the end users' ability to perform their duties while working remotely.

Resolution:
With the help of Goliath Performance Monitor, the Citrix team was able to determine printer mapping was exceeding the normal thresholds they would expect. This was due in fact that there were print drivers missing and or unsupported by Citrix. In turn, this caused long delays in the logon times primarily when the end users were working from home, or a remote site location. The Citrix engineering team was able to install/update any problematic print drivers which required such driver changes, and then configure a policy which would block any unsupported printers from being mapped to their users' desktops/applications.

	Summary	**Logon**	ICA/HDX	vGPU	VDI Server	Hypervisor Host	Apps/Processes	Alerts/Logs

Stage	Description	Start	Duration	Timeline
Brokering	Session brokering time	2019-11-27 13:03:13.303	0.617 s	
Client Validation	Brokering and Endpoint Launch execution including launching the client	13:03:13.303	6.45 s	
Server Validation	Server-side session validation time	13:03:13.303	5.45 s	
❯ Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	13:03:52.367	0 s	
❮ GPO	Group Policy Execution	13:03:53.966	48.2 s	
	Starting Registry Extension Processing.	13:03:53.966	0.078 s	
	Name: Win 10 VDA Settings			
	Starting Citrix Group Policy Extension Processing. Local Group PolicyLocal Group Policy	13:03:54.045	0.314 s	
	Starting Folder Redirection Extension Processing. Win 10 VDA Settings	13:03:54.364	0.29 s	
	Citrix Profile Management Extension Starting Citrix Profile Management Extension Processing.	13:04:03.450	0.078 s	
	Group Policy Drive Maps Extension Starting Group Policy Drive Maps Extension Processing. *Name:* VDI Drive Mappings	13:04:03.535	0.469 s	
	Group Policy Printer Mapping Extension	13:04:04.646	38.3 s	
	The following Group Policy objects were not applicable because they were filtered out :			
Profile	User Profile loading	13:03:37.253	0.44 s	
Interactive Session	Background processing for completing the load of the user's environment	13:03:52.360	15.443 s	

Estimated network bandwidth on one of the connections: 28470427 kbps.

A fast link was detected. The Estimated bandwidth is 227763 kbps. The slow link threshold is 500 kbps.

4. **Logon Script Improperly Coded**

Issue:
Providers and nurses at a large healthcare organization were experiencing longer than normal logon times, especially when first starting their shift on the ICU floors. Prior to working with Goliath Technologies, the issue was causing frustration with the employees, as well as directly impacting the patient care itself.

Resolution:
Once Goliath Performance Monitor was implemented and configured, the IT infrastructure team was able to determine there were improperly coded logon scripts being applied to the ICU team, which had been delaying logons. As these scripts didn't execute properly, they would eventually time out, but they took 60 seconds to do so. Not only were the staff receiving application level issues due to the scripts not "kicking off" properly, the excessive timeout period was taking 60 seconds for each script to "fail/quit." The logon duration was increased at times in excess of 6 minutes, however once the script related issues were mitigated, logon times averaged out to 37 seconds.

| Summary | **Logon** | ICA/HDX | vGPU | VDI Server | Hypervisor Host | Apps/Processes | Alerts/Logs |

Stage	Description	Start	Duration	Timeline
				85 s 175 s 255 s 350 s
Brokering	Session brokering time	2019-11-27 13:03:13.303	0.617 s	
Client Validation	Brokering and Endpoint Launch execution including launching the client	13:03:13.303	3.45 s	
Server Validation	Server-side session validation time	13:03:13.303	5.45 s	
❯ Authentication	User authentication, Policy Retrieval, and logon script determination at the session host	13:03:52.367	0 s	
❯ GPO	Group Policy Execution	13:03:53.966	331.6	
	Starting Registry Extension Processing.	13:03:53.966	120.4 s	
	Name: Win 10 VDA Settings			
	Starting Citrix Group Policy Extension Processing. Local Group PolicyLocal Group Policy	13:03:54.045	0.314 s	
	Starting Folder Redirection Extension Processing. Win 10 VDA Settings	13:03:54.364	9.083 s	
	Citrix Profile Management Extension Starting Citrix Profile Management Extension Processing.	13:04:03.450	0.078 s	
	Group Policy Drive Maps Extension Starting Group Policy Drive Maps Extension Processing. *Name:* VDI Drive Mappings	13:04:03.535	0.469 s	
	Scripting Extensions	13:04:04.646	229.1 s	
	The following Group Policy objects were not applicable because they were filtered out :			
Profile	User Profile loading	13:03:37.253	0.44 s	
Interactive Session	Background processing for completing the load of the user's environment	13:03:52.360	15.443 s	

Estimated network bandwidth on one of the connections: 28470427 kbps.

A fast link was detected. The Estimated bandwidth is 227763 kbps. The slow link threshold is 500 kbps.
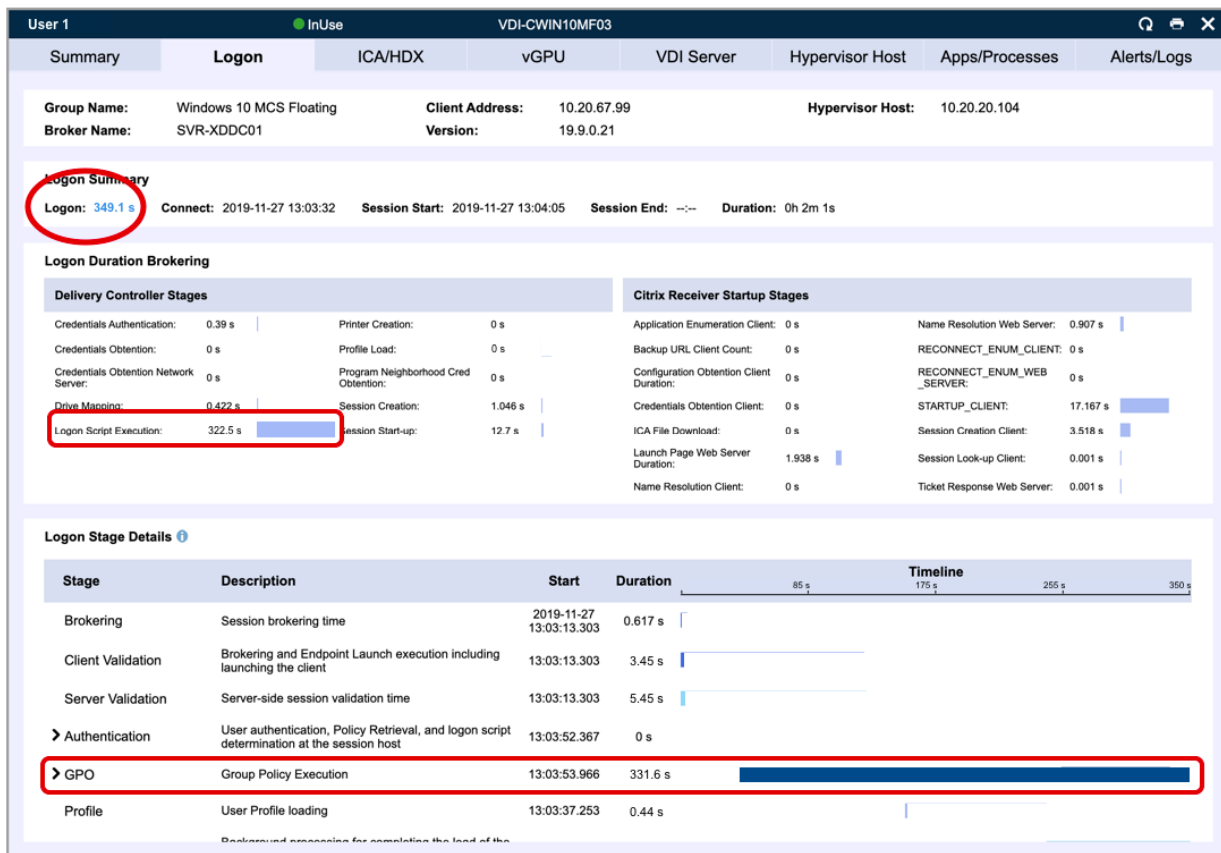
VII. Summary

As you can see, the Citrix Logon Process is a very complex set of technical hand offs between 33 different stages, with some of them being inter-dependent. It really is quite an amazing technical feat.

To truly be proactive and get ahead of logon issues before end users complain, it is important to have a real time, granular drill down into each of the stages, along with an understanding of how to utilize them. In addition, because we need objective evidence from time to time so we can defend Citrix, or show the true root cause, it is critical to have robust out-of-the-box reporting.

Goliath Performance Monitor is, in essence, a comprehensive logon duration monitoring, alerting, and analysis technology. Goliath Performance Monitor delivers each of the features you will need to encompass the troubleshooting needs in a Citrix environment.

Schedule A Personal Demo Or Try Goliath Performance Monitor Free for 30-Days – Includes Full Support from Goliath Tech Ops

You can instantly download a free fully supported 30-day trial of Goliath Performance Monitor here or click here to schedule a personal demo of Goliath Performance Monitor.

If you have a question, you can reach out to the Authors regarding Citrix logon issues and improving end user experience:

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Goliath Technical Support Team

The team members collaborated to bring together this How-To Guide by calling on their past Customer Experiences and Expert Knowledge of Citrix Troubleshooting. Beyond writing technical documents this team supports Goliath Customers and provides product feature/function guidance to development.