50
REASONS

WHY YOUR CITRIX ENVIRONMENT IS SLOW
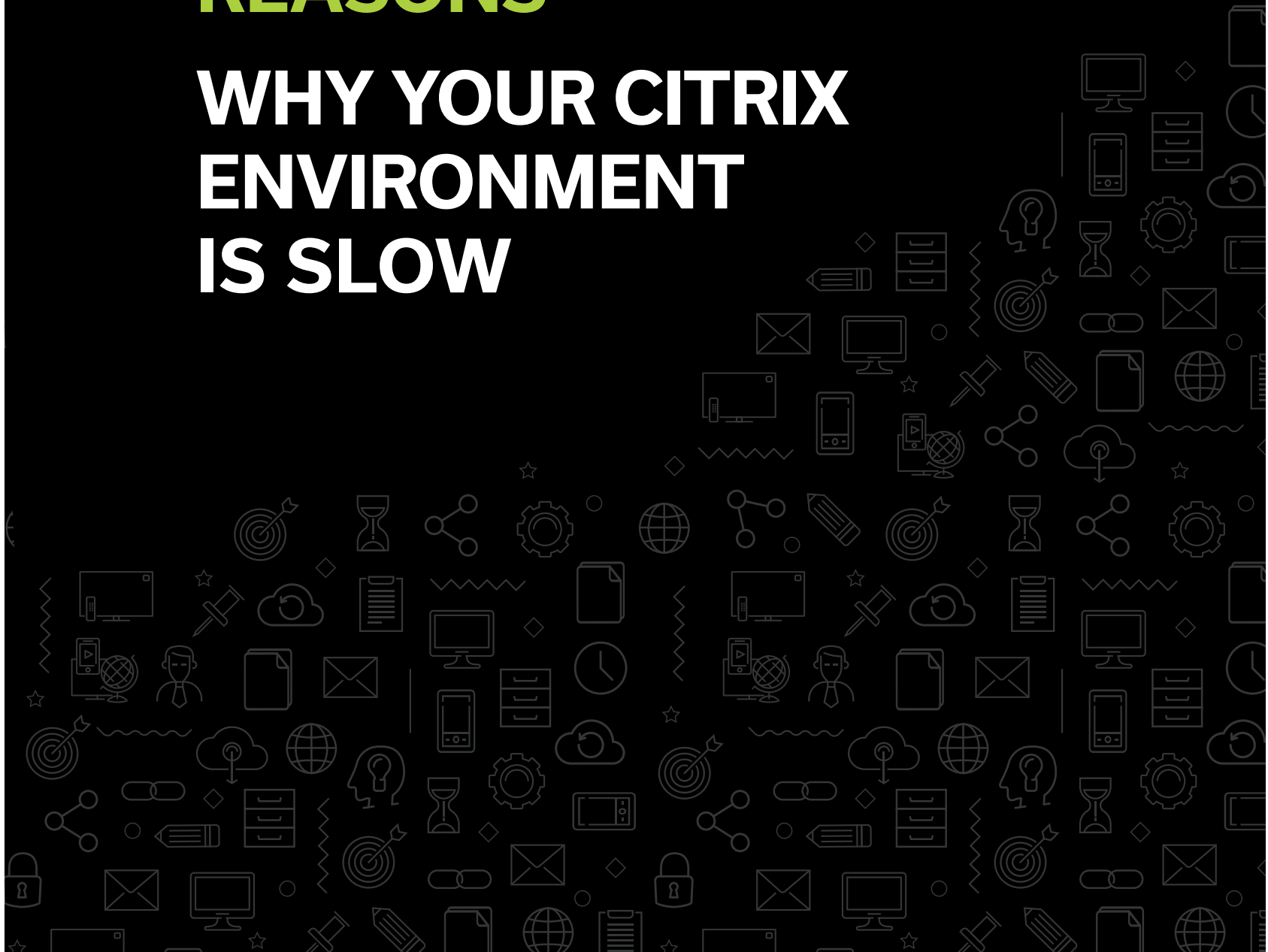
whitehat
VIRTUAL TECHNOLOGIES

Contents

Introduction

So, you have successfully purchased and installed Citrix products to make your employees' life easier. Congrats! But what happens when the products that are designed to improve the digital workspace feel like they are working against us?

You set your employees up with virtual machines so they could work from anywhere, but the environments are lagging. Your team is trying to access apps, data, and connected devices but instead, end up dodging error messages. Suddenly, the idea of workspace as a service feels more like a chore than a performance enhancer. Sound familiar?

Slow server, networking, and VDI issues can reduce productivity, slow your speed to market, and reduce profitability. Not to mention driving your employees nuts. The good news is that, sometimes, the answers are simpler than you might think. We've identified 50 of the most common reasons Citrix products are slow and have categorized them into seven areas, including: StoreFront, Hypervisors, XenServer Resourcing, Licensing, Citrix Provisioning Services, NetScaler Issues, and SQL Failure.

Identifying the problem is half of the battle. As Citrix specialists, we've seen the great potential of these products when they are installed, updated, and maintained properly. **Stop wasting any more of your time being frustrated and instead let's diagnose the problem together.**

Issues with Store Front

If you're using any of the Citrix products, your main goal is probably ensuring that your employees have access to all critical business applications and systems. StoreFront begins the Citrix experience and it begins our list to explore when trouble arises. After all, your employees can't access your apps and desktop if you can't deliver it to them.

01 Authentication Issues

Sometimes the most frustrating technology problems lie between your machine and your desk chair. In other words: human error. One of the most common reasons for authentication issues is a simple misconfiguration between the active directory and DDC authentication setup.

02 Replication Fails

The NT Service\CitrixConfigurationReplication and NT Service\CitrixClusterService accounts sometimes become corrupt in the local setup and need to be re-added to the local admin group in order to address some issues with replication between StoreFront Configuration Replication Service and Citrix cluster service processes.

03

Propagation Failures

You've set up StoreFront or made changes to the administrative environment, but you're having trouble propagating these changes to other machines. We don't want to sound like a broken record, **but misconfiguration is truly one of the most common reasons why StoreFront fails**. There are many reasons why propagation isn't successful, but most stem from the set up and build, such as: trusted domain membership to the StoreFront servers, firewall configuration, replication fails (yes, see above), IIS application interruption due to windows patches, and StoreFront windows services getting corrupted...just to name a few.

04

StoreFront Servers Not Syncing

Be careful when you troubleshoot by making server changes. If you accidentally change the domain name of a storefront server, you can expect syncing issues and lag.

05

Upgrade Issues

And last, but certainly not least, we all know that upgrades are a necessary evil — especially when they always seem to make something crash. Many of our customers have noticed that their default home page reverts back to the original IIS default site after StoreFront upgrades. **We know, we know. Upgrades are a pain.**
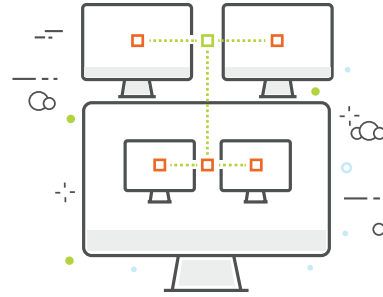
Hypervisor Performance

Hypervisors rule the world. You know you can't have a virtual environment without them. So what happens when they fail or aren't functioning properly? None of the guest machines function properly either. There is good news though. **Most performance issues stem from XenServer configuration and resourcing which can be fixed.**

06

Hypervisor Timing

If your hypervisor is on the wrong time, all other virtual machines connected to that host will be impacted. To ensure seamless communication between your devices, the XenServer NTP service needs to be configured on the same time as your active directory. **This little step can have a big impact.**

07

XenServer Outages

Uh oh. Your virtual environment just went down...just kidding! XenServer periodically loses its network management system, creating the appearance of an outage when it stops communicating with the Citrix XenCenter console. Many times, your hypervisor is still communicating with your virtual machines, but the network management system needs a little love before you'll be back online.

08

XenServer Outages

This time for real. If your XenServer storage repositories become unplugged, your guest machines will stop communicating with the attached storage. More deadly than the "spinning wheel of death", "SR_Backend_Failure_47 — The SR is not available" and "VDI unplugged" error lets you know it's time to check your resourcing.

09

Disk Usage

It should go without saying that you need to do a little housekeeping once in a while. Disk usage errors for the control domain can sometimes be alleviated by a simple reboot, but if you really are reaching the top end of your capacity, clean up data directories with unnecessary files such as /var/crash, /var/ log, and /var/tmp". Pro tip: Prevent this from ever happening by automating this cleanup process.

Customers running more than 50 Virtual Machines (VM) per XenServer host might wish to increase the memory allocated to dom0. The following section provides instructions to configure the dom0 memory.

This happens when the Memory allocated to Dom 0 is two small, so there for memory swapping starts to occur in a big way. This will directly impact the Hypervisor and all the VM's associated to that Hypervisor.

10

Memory Swapping

If memory allocated is insufficient Control Domain (dom0) in XenServer 6.1.0 or later, memory swapping can begin, creating a noticeable and material performance impact anytime this occurs.
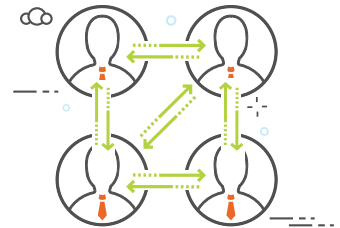
11

Mount Directory Errors

DNS, authentication, and networking: the trifecta when it comes to issuing mounting a CIFS share. If you can access the storage from Windows Explorer, using an IP instead of a DNS may be the best place to start. And hopefully resolve the error.

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Licensing Maintenance and Needs

Your product licenses need to be up to date and in good health before anything else will work properly. Which means we're back to the topic of upgrades and configuration again. These two pain-points don't just affect your StoreFront and day-today admin responsibilities, but also contribute to the larger health of your system and your employees' ability to connect to their Citrix products and your virtual work environment.

12 License Server Upgrades

A new license version is exciting. Especially when that comes with bug fixes, new features, and added bells and whistles. But that usually comes with a license server upgrade. If you wait too long to do this, XenApp and XenDesktop may become unresponsive once the license SA expires. Don't take any shortcuts: download the new license file when prompted to do so or risk user connectivity issues.

13 Licensing Grace Period

If you see that certain users can only connect for the next 30 days in the event log of delivery controllers, your licensing server may not be connecting and has entered a grace period. Resolve this... well...before those 30 days are up to avoid employee downtime. Pro tip: In certain instances, when a Citrix environment has been misconfigured, the grace period can be less than 30 days.

14

License Provisioning

License expiration, license provisioning vs. employee count, and connectivity issues can make it impossible for your users to connect between the Microsoft Remote Desktop and their Citrix resources. Most of these error messages will advise that you contact the sever administrator to determine where the problem lies so you can match your licensing needs to your workforce.

15

Outdated Provisioning Server

Replication errors can creep in when an outdated version of the Citrix Provisioning Server confuses itself by running the replication status process over top of the path to the store. A little maintenance saves a lot of time.
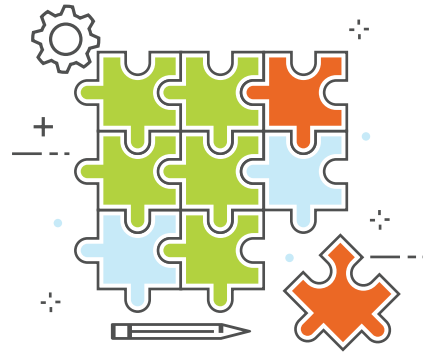
16

More Replication Issues

Like a good pair of socks, your PVP and your VDisk properties need to match across all PVS servers...or, you guessed it, more replication issues.

XenApp & XenDesktop Issues

When you're keeping it in the family — the XenApp and XenDesktop family that is — we always recommend that you invest in proper setup and deployment. **Citrix products are very powerful, but very complex, so nailing set up the first time is important.** Citrix's Virtual Desktop Handbook is the Holy Grail of best practices. If you haven't read this and you're wondering why the family is dysfunctional, it might be time to call in the babysitter (that's professionals, like us). If things still aren't right, consider these top offenders.

17

Machine Catalog Fails

If you're getting a machine catalog fail with an error, chances are your user permissions are failing to create a catalogue as a result of the argument trying to bind to the "MachineName" parameter and coming up with an empty array.

18

Unstable Console

The only things in life that are certain are death, taxes, and change. But if you're going to make changes to your XenDesktop or console, proceed with caution. You can create an unstable system by using PowerShell to maintain your XenDesktop or making DIY improvements that don't properly replicate back to the SQL database.

19

No Workstations Available

Optimizing power consumption and energy are part of responsibly managing your resources, but the Power Management system can sometimes unintentionally cause a delivery group error by limiting the number of machines allowed to boot to match consumption.

20

The Workstations Strike Back

If that isn't the issue and you're still receiving a No Workstations Available error, the broker service maybe unavailable or the connection to SQL might have been lost.

21

Return of the Workstations

Still No Workstations Available? Check to see if the VDA is registered with the broker service, as this is a common cause of the infamous 1030 error.

22

Slow Printing

It seems simple. The user device must have the same printer driver as the XenApp server. But, this simple caveat is one of the most frustrating and common issues users have. Each printer is different, and upgrading the driver on the client and server side has to happen concurrently. Pro tip: if you can use Citrix UPD alongside validated drivers and a properly architected print server you will be in better shape.

23

Slow Logons

There are many reasons users experience slow logons. The big three are: user profile configuration errors (re: what we said about installation and deployment),group policy configuration issues (there we are again), and desktop/server image — say it with us now — configuration issues.
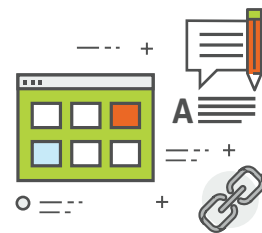
24 Slow Logons and Active Directories

We don't want to gloss over active directory issues because these are some of the most commonly misunderstood and painful reasons for slow logons. Active directory can get tangled in precedence processing, overrides, competing policies, and load issues...to name only a few. More importantly, it's often difcult to figure out where the actual problem is to fix it. We recommend using a separate test environment to find and address these issues to avoid causing any other problems and lean heavily on diagnosis tools like RSOP and Group Policy Wizard.

25 When You're Sure It's Not a Configuration Issue

Slow logons can also occur when roaming profiles start making your Xen products work too hard. If you suspect this might be the case, check your CPU and memory. If those aren't the issue, your next best guess should be file server disk latency caused by disk queue bottlenecks. These are typically caused by very large files or lots of small files such as cookies stored in a user's profile.

26 Redirected Folders

In that vein, redirected folders — while well intended — can cause a lot of heartburn and logon timeouts due to bad policies impacting those catalogues. Because redirected folders should, in theory, speed up your logon times by storing documents to a "share" space rather than copying them every time a user logs off or on, improper configuration can cause this process to come to a screeching halt.

27 Don't Overlook DNS

Many processes rely on DNS for resolution and support within the Citrix environment, so it's important that yours is running at 100%. Sometimes, poor performing DNS will appear like something else (such as slow logons), so keep an eye on this important health indicator.
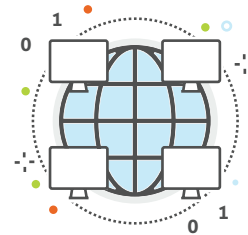
28

... or DHCP

DHCP is also ignored because it's a subsystem of your larger ecosystem. Add DHCP and DNS to your maintenance and troubleshooting checklist to avoid an important oversight.

29

LDAP Authentication

While we're at it, you should also add LDAP authentication to your checklist, as it is one of the more common culprits of logon failure according to the Citrix's support site.

30

Network Latency

If you're using Citrix products, you're probably trying to increase the speed at which your employees can access apps and information, which is why network latency can defeat this entire process if left unmanaged. Calculate your latency using Citrix's diagnostics toolkit to make sure your latency matches the Citrix protocol being used.

31

Client Latency

Client latency — as observed by the End-User Experience Monitoring (EUEM) virtual channel reporting the result of a single ICA round-trip measurement — should always be addressed as soon as it pops up to avoid user performance issues.

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32

Getting Off On the Right Foot

When your server logs on, a whole host of data, and applications may begin to load, impacting your Windows Ready time, or giving the perception of a slow logon while multiple apps try to fire up at once. Try to reduce the amount of apps and, we'll say it — junk, that needs to launch at logon and troubleshoot the load times themselves if the issue is pervasive.

33

Improper Permissions

If your users are experiencing slowness, but you are confident the Holy Grail is still intact, or if that individual seems to be one of the few people having problems, he or she may have a permissions issue. Incorrect Citrix permissions can cause unstable sessions or halt them all together, causing poor performance.

34

Session Corruption

If you've been using Citrix products for a while, this probably isn't the first time you've fallen prey to session corruption. The issue became more pronounced after the 7.x release due to a VDA bug that causes session to show as "connected" with empty user names, preventing people to connect back to their actual environments. The root cause of this lies in the Citrix Profile Manager and requires some heavy lifting to work around.

35

Jittery Sessions

Nothing is more annoying than halting, jittery displays when employees are trying to use complex apps or review intricate data. It's unprofessional, frustrating, and just plain annoying. Most often, these performance errors are caused by poorly configured display protocols that don't address each use case as a separate, segregated need, which causes delays and a bad case of the jitters.

36

Know Your Hardware

Let's get a little controversial for a second. We have just given you tons of reasons why Citrix products suffer from poor performance...but sometimes just sometimes it has nothing to do with the product or your configuration. It has to do with how you're treating your hardware. Be kind to your hardware: even though virtualization can amp up mediocre machines' performance so you can do more with less, that doesn't mean you should overload your system with endless instances. Know and respect your machines' limits. And yes, sometimes that means you might have to buy more. A good rule of thumb is a 3:1 ratio of VDI users for each physical machine.

37

Network Storage

Ok, that is enough lecturing about hardware. Back to the basics. Network storage can become a single point of failure if the network share becomes unavailable for some reason. If this occurs, all target devices streamed from the disk will become unavailable as well. Big. Problem.

38

Disk Space Is Still Important

We sometimes forget that virtual machines need disk space to perform their best even if they aren't linked tangibly to...well...the disk itself. It's important to have a process in place, either through alerts or notifications, that will alert administrators and give them enough time to add more disk to the storage solution before there's a real impact on performance so your Xen environments can keep running at the speed of your employees and business.

39 General Performance

Never underestimate the impact of your processor, memory, and disk utilization. Desktop and application usage can impact these critical functions. We know you already know this but some things never change.

40 Delivery Controller Upgrades

Last, but not least (for the Xen family, anyway) is a doozie. If you've upgraded your delivery controllers to version 7.9 or higher and have experienced reboot issues with Server OS machines...you're not alone. This upgrade created new customizations that require users to recreate the machine catalogue if power management is not configured properly.
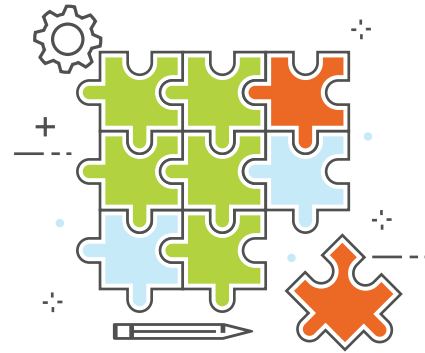
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NetScaler Problems

Everyone loves networking. A good industry pub-crawl, a shiny new headshot for your LinkedIn profile, a tech meet-up...oh wait, not that type of networking. We mean REAL networking (but admit a pub crawl is pretty great too, right?). The Citrix NetScaler product is a system administrator's dream. Even right out of the box, this product offers powerful and secure networking capabilities. But that doesn't mean it's perfect.

41

Lock It Up

One of the most important benefits of NetScaler is unbeatable security, but if you don't take a few baseline factors into consideration you can immediately put your system at risk (which is especially problematic for heavily regulated or audited industries). The laundry list of items that can compromise your security include: disabling SSLv3, enabling TLS 1.2, disabling RC4 cyphers, setting ECDHE as the preferred cipher, setting TLS Fallback SCSV, using SHA2/SHA256 signatures on all certs and implementing Strict Transport Security. If you're only going to splurge on one area for professional help, protecting your company and clients' data may be one of the wisest places to invest.

42 Sub-Par End User Experience

You don't want your network to be good...when it could be great. To get the most out of your NetScaler product, don't overlook key configuration opportunities such as NetScaler Front End Optimization (FEO); configuring and disabling HTTP compression and integrated caching; configuring the content accelerator, client-keep-alives, Nagle's algorithm, and proper parameter and packet size guidelines. In other words, no matter what product you choose: configuration matters.

43 WAN Acceleration

Many organizations are led to believe that the WAN accelerator from Citrix (and its various competing products, in fairness) will make your network faster. We hate to say this, but the speed of light simply can't get any speedier. WAN accelerators have their limit and uses. Adjust your expectations accordingly. The best use of a WAN accelerator is to improve performance of repeated jobs with content caching needs, compressing certain types of traffic (like print jobs, or file sync and share) to improve performance.

44 Misconfiguration of Load Balanced Virtual Servers

Load balancing is one part art and one part science. A slight misconfiguration of monitors or physical servers can cause outages during maintenance or heavy loads. Striking the perfect load balance is as important as your work life balance. You don't realize it's a problem until it's probably too late.

45

SSL Certificates

Set up notifications for expiring SSL certifications either through the provider itself or through NetScaler's larger management dashboard to avoid a complete — and we mean complete — halt of all communication via the NetScaler Gateway and all SSL services. **Maintenance is annoying, but outages are worse.**

46

Deliver Group Name Error

If NetScaler can't reach the VDA itself or the STA has a mismatch, you may receive a failed Delivery Group Name error. The root cause may not always be apparent, but if you are trying to connect your Xen products to NetScaler, keep an eye out for this common issue.
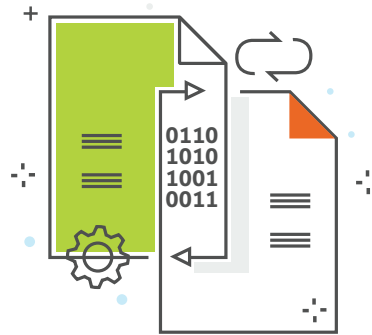
SQL Failure

Your SQL server is just as important as your products. As always, we recommend starting with the age-old adage: a stitch in time saves nine. Citrix publishes a list of best practices that are often overlooked and can save you a lot of time and headaches before you begin the troubleshooting process.

47

Not To Beat a Dead Horse

But almost all the common SQL failures we see are rooted in poor configuration. The following article should provide a basic checklist when assessing SQL needs: **https://support.citrix.com/article/CTX139508.**

48

Incorrect Permissions

Permissions may seem somewhat minor, but they can lead to big issues such as database lockouts and database crashes. Avoid needing to deploy your recovery plan by triple checking this critical element.

49 Incorrect Permissions

This one is so important that we're going to say it again too. In addition to the risk of database crashes, incorrect permissions during an upgrade process can create a disparity between your upgraded software and an outdated table database. If this happens, recovering your data can be extremely difficult and time consuming.

50 Log Rotation

We'll leave you with one of the most commonly overlooked configuration errors we see. After the 7.x upgrade, Citrix adopted a full SQL model. That means your logs can grow...and keep growing...and growing. If you don't properly rotate the logs, they can lead to SQL becoming full and causing poor performance and blackouts.

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Conclusion

Knowledge really is power. By identifying the root cause of your system's slow performance and error messages, you can begin solving these problems. Then, once your system is in good health, it's easier to maintain over time. A good installation and early problem solving around common StoreFront, XenApp, XenDesktop, XenServer, NetScaler, Networking, and SQL issues can make or break your experience with Citrix products and your employees.

We hope you found this ebook helpful, if you are still having citrix problems and need some help trouble shooting please contact us we would be happy to help.

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Whitehat is a virtualization integrator, managed services and security consulting services firm focused on creating environments that are built, measured and managed through the eye of the end user. Whitehat manages, supports or hosts over 9,000 Citrix end users, cross industry, guaranteeing Citrix performance. Learn more at **www.whitehatvirtual.com.**

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