



ORACLE
NETSUITE

Optimizing System Performance Guide

2022.2

March 15, 2023



Copyright © 2005, 2022, Oracle and/or its affiliates.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, and MySQL are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

If this document is in public or private pre-General Availability status:

This documentation is in pre-General Availability status and is intended for demonstration and preliminary use only. It may not be specific to the hardware on which you are using the software. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to this documentation and will not be responsible for any loss, costs, or damages incurred due to the use of this documentation.

If this document is in private pre-General Availability status:

The information contained in this document is for informational sharing purposes only and should be considered in your capacity as a customer advisory board member or pursuant to your pre-General Availability trial agreement only. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described in this document may change and remains at the sole discretion of Oracle.

This document in any form, software or printed matter, contains proprietary information that is the exclusive property of Oracle. Your access to and use of this confidential material is subject to the terms and conditions of your Oracle Master Agreement, Oracle License and Services Agreement, Oracle PartnerNetwork Agreement, Oracle distribution agreement, or other license agreement which has been executed by you and Oracle and with which you agree to comply. This document and information contained herein may not be disclosed, copied, reproduced, or distributed to anyone outside Oracle without prior written consent of Oracle. This document is not part of your license agreement nor can it be incorporated into any contractual agreement with Oracle or its subsidiaries or affiliates.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <https://www.oracle.com/corporate/accessibility>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Sample Code

Oracle may provide sample code in SuiteAnswers, the Help Center, User Guides, or elsewhere through help links. All such sample code is provided "as is" and "as available", for use only with an authorized NetSuite Service account, and is made available as a SuiteCloud Technology subject to the SuiteCloud Terms of Service at www.netsuite.com/tos.

Oracle may modify or remove sample code at any time without notice.

No Excessive Use of the Service

As the Service is a multi-tenant service offering on shared databases, Customer may not use the Service in excess of limits or thresholds that Oracle considers commercially reasonable for the Service. If Oracle reasonably concludes that a Customer's use is excessive and/or will cause immediate or ongoing performance issues for one or more of Oracle's other customers, Oracle may slow down or throttle Customer's excess use until such time that Customer's use stays within reasonable limits. If Customer's particular usage pattern requires a higher limit or threshold, then the Customer should procure a subscription to the Service that accommodates a higher limit and/or threshold that more effectively aligns with the Customer's actual usage pattern.

Beta Features

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software" or "commercial computer software documentation" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

This documentation is in pre-General Availability status and is intended for demonstration and preliminary use only. It may not be specific to the hardware on which you are using the software. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to this documentation and will not be responsible for any loss, costs, or damages incurred due to the use of this documentation.

The information contained in this document is for informational sharing purposes only and should be considered in your capacity as a customer advisory board member or pursuant to your pre-General Availability trial agreement only. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described in this document remains at the sole discretion of Oracle.

This document in any form, software or printed matter, contains proprietary information that is the exclusive property of Oracle. Your access to and use of this confidential material is subject to the terms and conditions of your Oracle Master Agreement, Oracle License and Services Agreement, Oracle PartnerNetwork Agreement, Oracle distribution agreement, or other license agreement which has been executed by you and Oracle and with which you agree to comply. This document and information contained herein may not be disclosed, copied, reproduced, or distributed to anyone outside Oracle without prior written consent of Oracle. This document is not part of your license agreement nor can it be incorporated into any contractual agreement with Oracle or its subsidiaries or affiliates.

Send Us Your Feedback

We'd like to hear your feedback on this document.

Answering the following questions will help us improve our help content:

- Did you find the information you needed? If not, what was missing?
- Did you find any errors?
- Is the information clear?
- Are the examples correct?
- Do you need more examples?
- What did you like most about this document?

Click [here](#) to send us your comments. If possible, please provide a page number or section title to identify the content you're describing.

To report software issues, contact NetSuite Customer Support.

Table of Contents

Optimizing NetSuite Performance	1
Data Profiling and Caching	1
First Load of a Record	2
Load Testing	3
User Acceptance Testing	4
Troubleshooting Performance Issues	6
Troubleshooting Network Performance	6
Troubleshooting Client Performance	6
Identifying Browser Performance Issues	7
Gathering Performance Details	8
Performance Best Practices	10
Tips to Optimize Performance	11

Optimizing NetSuite Performance

System performance indicates how well a computer system or application is doing the work it is supposed to do. NetSuite is built on an infrastructure that is designed to support high volumes of data transactions for tens of thousands of companies globally.

This content is intended to help administrators optimize the performance of their NetSuite application and address any performance issues that their NetSuite users may experience.

When working in the NetSuite application, it is important to understand that customization within the application is often the main cause of performance challenges.

For example, the following customizations could increase the amount of time it takes to load items in your NetSuite application:

- Configuration changes
- Added scripting
- Additional workflows
- Form and field additions
- Enabling features and functionality

More business logic to process often means that more load time is required. To optimize NetSuite performance, see [Performance Best Practices](#).

You can also review the following performance-related concerns and explanations that may help you optimize performance in your NetSuite account:

- [Data Profiling and Caching](#)
- [First Load of a Record](#)
- [Load Testing](#)
- [User Acceptance Testing](#)

Data Profiling and Caching

Netsuite uses proactive monitoring, data profiling, and caching to ensure performance and scalability.

Database performance is optimized by analyzing data distribution. The data profile is used to determine optimal query execution. NetSuite proactively monitors data changes on an ongoing basis to maintain a current data profile.

Caching means to store recently used data, code, and queries for future use. Caching is used at strategic points in the application to improve performance and scalability. Caching occurs at the database, application infrastructure, network, and browser levels. Content that can be loaded from a cache improves server, network, and client response time.

Changes in data and configuration can affect caching, data profiles, and performance. Code changes, new releases, bundle installations or upgrades, SuiteApp deployments, or enabling new features can invalidate a cache. Customization changes in SuiteScript scripts, workflows, templates, forms, and fields can have a similar effect on caching and performance. These changes can result in temporary latency because new code and assets are not yet cached or optimized.

Large imports, deletions, record changes, or new custom record types can temporarily affect application performance. Rapid changes in data can invalidate the existing data profile and result in temporary latency until the database can gather statistics to achieve optimal query performance.

The frequency, volume, and timing of system use can also affect performance. Netsuite is designed to perform at scale. Infrequently used record operations may experience increased latency because they cannot fully benefit from caching. Logging out, changing roles, or using per-user customization can decrease the effectiveness of caching.

Data Profiling and Caching Considerations

Minimize role switching. Frequently switching roles can invalidate session-level caching and role-level caching.

Limit unique forms, sublists, lists, and fields.

Some tasks that are only done infrequently may experience latency when they are performed for the first time. Grouping these infrequently used activities into one session may mitigate the latency by avoiding first-use latency for subsequent actions.

Data changes, and large data imports should be performed outside of business hours, and well in advance of any go-live dates. Allowing time for the system to process the data changes and gather statistics can mitigate the impact of large data changes.

Monitoring

Using the Record Pages Monitor in Application Performance Management (APM), you can review the aggregated performance of your top ten records, and any records on your watch list.

Using the Response Time chart and Throughput chart, you can compare the response time to the volume of record instances. It is not uncommon to see increased response times after periods of inactivity and infrequent use. You can test response time by performing multiple similar operations. Perform three or four operations of the same type on the same record type, and you should see the performance impact affect only the first operation. For more information, see the help topic [Record Pages Monitor Charts](#).

You can use the Response Time chart to compare the time line of performance after system updates, configuration changes, or large data imports.

Using the custom date and time range filter, you can compare the median times for two different time ranges across your monitored records. For more information, see the help topic [Adding a Custom Date and Time Range on Record Pages Monitor](#).

First Load of a Record

To provide the best customer experience, NetSuite leverages multilayer caching to speed up performance on frequently used operations. For the first execution of a record and action combination (for example, viewing a sales order), the system needs more time to load and perform the action. For subsequent executions, the cached portions of the operation will perform faster than the first execution. Actions that are not frequently used may be removed from a cache over time and take longer to execute on the next, uncached execution. This performance impact is known as first-load latency.

Any of the following operations can cause actions to be removed from a cache and may cause users to experience first-load latency:

- Logging into NetSuite (this action establishes a user's first cache for a session)
- Changing roles or altering permissions
- Enabling or disabling account features or user preferences


- Clearing a browser cache of images, data, or cookies
- Using the system infrequently (stale data is flushed from a cache automatically)

First Load Considerations

The multilayer caching mechanism in NetSuite is optimized for the most-used records and actions, and it cannot be adjusted by customers. However, users with the Administrator role can customize roles with permissions and access levels that limit the need for role switching, which can indirectly reduce system latency.

Some record and operation combinations, such as saving a sales order, can take different amounts of time to complete for different roles. You should make sure that you are using the appropriate role for the task you want to complete. The Administrator role includes most privileges that can be assigned to a role; therefore, the loading times for some operations could be longer for the Administrator role than they are for other roles with fewer privileges. If another role can accomplish the task, using the role with fewer permissions may improve loading times.

Load Testing

Load testing is the validation of system response under a predefined load. Load testing is encouraged to minimize risk associated with performance and scalability upon go-live or phased release. All load testing needs to conform with Oracle NetSuite Terms of Service. For restrictions regarding load testing, refer to General Restrictions section 3.1.1 of your  [Netsuite Subscription Services Agreement](#).

Stress testing is a form of deliberately intense testing used to determine the stability of a given system. It involves testing beyond normal operational capacity, often to a breaking point, to view the results. Stress testing is not supported in NetSuite.

Load Testing Considerations

Load tests should have a specific and realistic performance and load target.

Performance targets can be extrapolated from an individual action's execution time. For example, if saving a sales order performs at 10 seconds per save, and you are saving 1,000 sales orders, then 10,000 seconds or 2 hours and 45 minutes is an estimate for the duration of the test.

The number of concurrent threads should not exceed concurrency governance. To determine your available concurrency, refer to your tier of service and SuiteCloud licenses.

Concurrent threads may not increase throughput linearly. Concurrent access to resources may affect performance.

Test data should represent live data and use patterns. Test data should account for the normal variation in your expected production data. You should not use a single customer or item when testing. For example, if you are testing the process of a customer paying for an order, consider the following best practices:

- The customer should vary.
- The payment type should vary.
- The number, type, and quantity of order lines should vary.
- Order and order line customization should be tested.

The testing environment should mirror the production configuration to obtain representative results.

Load tests should be iterative. Test, analyze, make adjustments, and retest. Repeat.

You can use the Application Performance Monitor to evaluate your testing.

Notify NetSuite Customer Support of an upcoming load test by submitting a support case. Include the following information:

- Authorized contact who should be notified about any questions or problems
- Account type and ID where testing is being performed
- Date, time, and duration of testing
- Features or functionality being tested
- Type of testing being performed:
 - New release testing
 - Web services or RESTlets
 - Web order processing
 - Bulk processing (revenue recognition, billing, costing, subscription billing, invoicing)
 - CSV imports

User Acceptance Testing

User Acceptance Testing (UAT), or end-user testing, acts as the last phase of the software development process where business functions are tested in a real-world scenario. If the software works as required and without issues during normal use, one can reasonably extrapolate the same level of stability when the software is released.

The UAT scenarios are critical to validate the software before going live. The scenarios should be based on best practices to ensure they are within the bounds of what is being implemented. UAT also further enhances the user's education of NetSuite and helps reduce go-live and post go-live issues. Verifying the software and potentially uncovering unknown issues before going live are essential elements for customer success.

UAT Considerations

User Acceptance Testing should be done in a test environment, such as a sandbox or development account. The test environment should be safe and isolated from the production environment, and it should permit users to develop and test new implementations and customizations without affecting the production environment. Define your user base as accurately as possible, and identify a test case that is based on a real-world scenario so that your UAT reflects real use cases as much as possible.

To learn more about NetSuite's different account types, see the help topics [Understanding NetSuite Account Types](#) and [NetSuite Development Accounts](#).

Understanding UAT Performance

User Acceptance Testing (UAT) is a structured testing process that makes sure that all requirements are performing as the user wants and expects. During UAT, users may experience some aspects of the testing that may not meet their performance expectations, such as how long it takes to load a form or UI, save or edit a record, or complete an end-to-end process.

When an application's performance affects the overall goal of each test, it's crucial to understand the different factors that may contribute to the application's behavior. Knowing how to identify and isolate these factors is an essential part of understanding the issue.

To understand how these factors can affect user testing, see [Tips to Optimize Performance](#).

Troubleshooting Performance Issues

This section provides some commonly used tips for optimizing and troubleshooting NetSuite performance. The following topics introduce some suggested guidelines:

- The NetSuite status page at status.netsuite.com provides up-to-date information about any system issues currently being addressed, and the resolution path.
- The Application Performance Management (APM) SuiteApp lets you observe and manage the performance of NetSuite customizations and business-critical operations. It can help with troubleshooting slow performance issues. For details, see the help topic [Application Performance Management \(APM\)](#).
- Help topics in the [Performance Best Practices](#) section provide tips for optimizing performance in the NetSuite application.

The APM SuiteApp compiles information into a performance dashboard that highlights performance issues and anomalies, and the dashboard includes links to more detail. For more information, see the help topic [Application Performance Management \(APM\)](#). If you need help optimizing performance, contact your NetSuite account manager about adding Advanced Customer Support. For more information, see the help topic [Advanced Customer Support](#).

Note: When performing an action for the first time, an increased latency in the system response is expected due to stale caches. This latency is usually noticeable during morning hours or after a break when users log in to the system. Perform the action a few times to add it to the cache.

To see specific troubleshooting issues and how to solve them, search "Troubleshooting Performance" in SuiteAnswers and, from the All Results section on the left side of your screen, select Support Articles. This information has been compiled by NetSuite Customer Support based on their experiences troubleshooting performance issues and is updated regularly.

Troubleshooting Network Performance

Network performance is measured as the time it takes for data to travel from a server at NetSuite to your computer. Some pages in NetSuite may take longer to load than others.

The following issues are symptoms of network performance problems:

- A form, such as a customer record or transaction, takes a long time to finish loading.
- A report takes a long time to display data on the page.

Use the Performance Details window to determine if network time accounts for a large amount of the total time to load a slow page. For more information, see [Gathering Performance Details](#).

NetSuite uses a Content Delivery Network (CDN) in its global distribution network to improve page load times in the NetSuite UI. All application domains are powered by a CDN (<https://<accountID>.app.netsuite.com>).

Troubleshooting Client Performance

Client performance is measured as the time it takes for your computer to display a page. Other applications running on your computer, in addition to NetSuite, are using your computer's resources. These applications may impact the performance of the NetSuite application on your computer.

Some client performance problems may appear when using one browser but not when using another browser. For example, some browsers may render pages faster than others. These differences may result

from browser configuration, security defenders, and individual browser add-ons. For more details, see the help topic [Supported Browsers for NetSuite](#).

Also note that some NetSuite tasks require intensive resources (for example, creating a sales order with 200 items).

If you notice client performance issues, the following procedures can help you identify and troubleshoot them.

Identifying Client Performance Issues

Use the following steps to identify client performance issues.

To identify client performance issues:

1. On your computer, open the Task Manager.
2. Click the **Processes** tab.
3. Click **Memory** to sort the processes based on memory usage, or RAM.

There are no universal requirements for the amount of RAM a computer must have or how fast it must be to run NetSuite. The requirements depend on the way your computer is being used and on the other applications running on your computer. For example, your computer may be able to run NetSuite but may not be powerful enough to run NetSuite with your Voice Over Internet Protocol (VoIP) application. Or, your computer is powerful enough to run your VoIP application and NetSuite at the same time, but it cannot create a sales order that contains 200 line items.

Troubleshooting Client Performance Issues

Use the following steps to troubleshoot client performance issues.

To troubleshoot client performance issues:

1. Close all the applications you are not using. If you need to run more than one application, consider increasing your computer resources (RAM).
2. Check your firewall application or other threat detection software. Some of these applications check the page before loading it in your browser, which can cause a delay. Adding a new rule to explicitly allow traffic from and to *.netsuite.com domains may reduce latency. For more information, see the help topic [NetSuite IP Addresses](#), or consult the documentation of your firewall or threat protection software provider.
3. Remove any spyware that could be using your computer's resources.
4. Determine whether the issue is only happening for one type of form. Try to determine what is different about the form compared to other forms that load more quickly.
5. Test using different browsers. Use the browser that displays the page faster.
6. Determine whether there are add-ons running in your browser, such as antivirus add-ons, anti-spam add-ons, or phishing add-ons. Eliminate browser add-ons, one by one, to identify the cause of the issue.

Identifying Browser Performance Issues

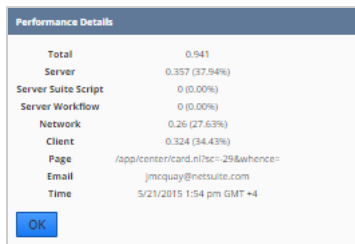
Performance issue could be caused by the browser you are using. Use the following steps to verify whether this is the case.

To verify whether a performance issue is caused by the browser:

1. Check the browser version.
 - Verify that the browser version is supported by NetSuite. For more information, see the help topic [Supported Browsers for NetSuite](#).
 - Ensure that you are using the latest version of the browser.
 - Do not use trial, development, or early adoption browser versions.
2. Check whether the problem is occurring when using other supported browsers.

Gathering Performance Details

To help users to identify performance issues, you can ask them to double-click the Oracle NetSuite logo in the upper-left corner of any page in the NetSuite application to display the Performance Details window. This window displays performance details that can be helpful for troubleshooting. This information is different for each user. If necessary, you can use the information displayed to provide data to NetSuite Customer Support.



The screenshot shows a 'Performance Details' window with the following data:

Performance Details	
Total	0.941
Server	0.357 (37.94%)
Server Suite Script	0 (0.00%)
Server Workflow	0 (0.00%)
Network	0.26 (27.63%)
Client	0.324 (34.43%)
Page	/app/center/card.nl?sc=29&whence=
Email	jmcquay@netsuite.com
Time	5/21/2015 1:54 pm GMT +4

An 'OK' button is located at the bottom left of the window.

The Performance Details window includes the following data:

- **Total** – Displays the total page load time (in seconds).

 **Note:** This total may not apply to reports, dashboards, centers, or saved searches.

- **Server** – Displays the page load time (in seconds) and the percentage of the total page load time spent retrieving information from the NetSuite server. This time includes server-side scripts and workflows, and it can also be affected by customizations such as custom fields and other custom elements.
- **Server Suite Script** – Displays the server time that was spent on server-side scripting (in seconds and as a percentage of total server time).
- **Server Workflow** – Displays the amount of server time that was spent on work flows (in seconds and as a percentage of total server time).
- **Network** – Displays the total page load time for data to travel from the NetSuite servers to the computer (in seconds and as a percentage of total server time).

If this row has the highest percentage in the list, the problem could be related to the internet service provider (ISP). See [Troubleshooting Network Performance](#).

- **Client** – Displays the total page load time for the computer to render the page (in seconds and as a percentage of total server time).

If this row has the highest percentage in the list, see [Troubleshooting Client Performance](#).

- **Page** – Displays the web address of the page you are viewing in the application.
- **Email** – Displays the email address associated with the account.

- **Time** – Displays the system date and time.

The information in the Performance Details window is based on the data sent to the client from the server. Occasionally, when the end-to-end time metric is not sent from the server, only the Client, Page, Email, and Time values are shown.



Warning: If slow performance is consistently an issue on a certain page, use [Application Performance Management \(APM\)](#) to review performance. If you require further assistance, use the information displayed in the Performance Details window to create a case with NetSuite Customer Support or engage Advanced Customer Support to help you optimize performance.

To copy performance details into a support case:

1. Double-click the Oracle NetSuite logo in the upper-left corner of the page that exhibits slow performance.
2. Select all the text in the window, and copy it.
3. Click the **Support** tab.
4. Click **Go to SuiteAnswers**.
5. On the SuiteAnswers page, click **Contact Support Online**.
6. In the **What would you like to do?** field, select **Report a performance problem**.
7. Paste the text into the **Message** field.
8. Click **Submit**.

When you report a network performance issue to NetSuite Customer Support, please include answers to the questions below. This information will help to diagnose and resolve the problem quickly.

- What browser are you using? Do you have any add-ons installed?
- Are you using a firewall? If so, what is the name and version of the firewall software or device? What ports are open?
- Are you using a proxy for your HTTP connections? If so, what is the name and version of the software? For more information, see [Optimize Firewalls and Proxy Servers](#).
- Are you using an antivirus or anti-spyware application? If so, what is the name and version of the software?
- Include your public IP address in the case.

To get this information, go to <http://www.whatismyip.com>.

The more information you add to a case, the better NetSuite Customer Support can serve you. If you are using a PC, open a command prompt and run the following commands to gather more information to add to your case:

- Execute a Domain Name System (DNS) lookup on the affected domain. For example, if you are having trouble with `<accountID>.app.netsuite.com`, then type the following command, and press Enter.

```
1 | nslookup.exe <accountID>.app.netsuite.com.
```

Performance Best Practices

Use these best practices to maximize the performance of your NetSuite service.

SuiteApp Architectural Fundamentals & Examples (SAFE) Guide

The SuiteApp Architectural Fundamentals & Examples (SAFE) Guide is provided for independent software vendors (ISVs) who build custom SuiteApp solutions for deployment to customer accounts. This guide includes a variety of best practices, some of which relate to performance optimization. See [SuiteApp Architectural Fundamentals and Examples \(SAFE\)](#) in SuiteAnswers.

SuiteCloud Plus

The purchase of a SuiteCloud Plus license can enhance performance. A SuiteCloud Plus license increases the number of SuiteCloud processors or queues that are available for scheduled scripts, and it increases the number of queues and threads available for CSV import jobs. Resources for optimizing SuiteCloud Plus include:

- [SuiteCloud Plus Settings](#)

SOAP Web Services

Resources for optimizing the performance of SOAP web services include:

- [SOAP Web Services Performance Optimization](#)
- [Web Services and RESTlet Concurrency Governance](#)
- [Synchronous Versus Asynchronous Request Processing](#)
- [SuiteCloud Plus Settings](#)

CSV Import

Resources for optimizing the performance of CSV import include:

- [Setting CSV Import Preferences](#)
- [General CSV File Conventions](#)
- [Use Multiple Threads and Multiple Queues to Run CSV Import Jobs](#)
- [Performance Considerations During Record Updates](#)
- [SuiteCloud Plus Settings](#)

SuiteScript

Resources for optimizing the performance of SuiteScript include:

- [Optimizing SuiteScript Performance](#)
- [SuiteScript Best Practices](#)
- [User Event Script Best Practices](#)
- [SuiteCloud Processors Processor Allotment Per Account](#)
- [SuiteCloud Plus Settings](#)

Resources for optimizing the performance of SuiteScript 2.0 include:

- [Map/Reduce Script Best Practices](#)
- [User Event Script Best Practices](#)

SuiteFlow

Resources for optimizing the performance of SuiteFlow include:

- [SuiteFlow Best Practices](#)

SuiteBuilder

Resources for optimizing the performance of SuiteBuilder include:

- [Optimizing Custom Form Performance](#)

SuiteAnalytics Connect

Resources for optimizing the performance of SuiteAnalytics Connect include:

- [Connect Service Considerations](#)

SuiteCommerce

Recommendations for optimizing SuiteCommerce performance for NetSuite users include:

- [Best Practices for Customizing SCA](#)
- [Managing Web Store Performance Impact](#)
- [Best Practices for Website Performance](#)
- [Improve the Performance of the Search Results Page](#)
- [Performance Management and Tips for SCIS](#)
- [NetSuite SuiteCommerce Advanced Performance Standards](#)

Tips to Optimize Performance

This content is intended to help administrators improve the performance of their NetSuite application and address performance issues that their NetSuite users may experience.

Optimize NetSuite Preferences

NetSuite includes many preferences that users can set to configure the system for optimum performance. Users can review available preference options at Home > Set Preferences.

Users can adjust the following preferences to speed up page loading:

- On the Appearance subtab, in the Centers & Dashboards section, set the **Landing Page** preference to open NetSuite to a page other than the Home page. This preference can be set to open NetSuite on the page that a user visits most frequently.
- On the General subtab, in the Optimizing NetSuite section:
 - Check the **Delay Loading of Sublists** box to initially load NetSuite pages without data on subtabs. When this box is checked, the data on each subtab is loaded only when the subtab is clicked, which shortens the initial page loading time.
 - Set the **Number of Rows in List Segments** field to a lower number to speed the loading of pages containing long lists.
A segment size of 50 is a balanced option. When a page includes a long list of records, the list is divided into segments, with one segment loaded at a time. Lowering this preference decreases the size of each segment.
 - Set the **Maximum Entries in Dropdowns** field to a lower number to speed the loading of pages containing dropdown lists with lots of options.
You should use a setting of 50 or less, unless larger menus are required. Any list with more results appears in a popup instead of a dropdown list. Using popups speeds page load time.
 - With dropdown lists, all values in a list are loaded when a user accesses a page.
 - With popup list fields, the lists are not loaded until a user searches for an item or clicks the list icon. Users can quickly search and automatically complete fields by entering the first few letters of the item and pressing the Tab key.

Optimize Search and Performance Reporting

NetSuite provides powerful search capabilities that enable retrieval of the precise information needed, from a potentially vast amount of stored data. However, searching a large number of stored records can slow the retrieval of search results.



Important: Keep in mind:

- Use scheduled searches where possible, even for integrations where performance is currently acceptable. Scheduled searches run in the background and can help ensure results are delivered reliably even as data sizes grow over time.
- Perform searches and reports on a limited time range (smaller is always better).
- Avoid including system notes in your searches because they contain a lot of data. If you have any logic based on the record history, it is preferable to have a custom field on the record itself.

For information about different types of NetSuite searches, see the help topic [Search Overview](#). For details about preferences you can set for searches, go to Home > Set Preferences, and click field names on the Analytics subtab.

Avoiding the “Contains” Condition in Searches

The contains condition is one of the most resource-intensive search mechanisms. Try to replace this condition wherever possible to improve search performance:

- If all of the records you want to retrieve begin with the value you are attempting to match, use “starts with” or “keywords” instead of “contains”.

For example, if you are searching for all records for customers with names beginning with “PennyPack”, such as “PennyPack Systems-NY” and “PennyPack Systems-SF”, you can define search criteria of “Name/ID starts with PennyPack”, rather than “Name/ID contains PennyPack”.

- If all of the records you want to retrieve contain words beginning with the value you are attempting to match, use “has keywords” instead of “contains”.

For example, if you are searching for all records for customers with the word “Toys” in their names, you can define search criteria of “Name/ID has keywords TOYS”.

Scheduling Exceptionally Long Saved Searches

NetSuite offers the option to schedule saved searches and have results sent as an email to the recipients you choose, so you do not have to stop your work to wait for exceptionally long searches. On the Email subtab of a Saved Search definition page, you can choose the date or dates when you want to run the search, and you can select one or more recipients for emailed search results. Scheduled saved searches are run at 2 a.m. Pacific time on the dates specified. For more information, see the help topic [Enabling Saved Search Scheduled Email](#).

Scheduling Exceptionally Long Reports

If you discover that a report takes a long time to return results, you can click **Schedule** in the footer of the report. Clicking the Schedule button opens the Schedule Report page where you can create a schedule to automatically send the report as an email. Schedules can be created for standard and saved reports and can be sent to other users.

On the Schedule Report page, you can select recipients, enter a message, and select attachments to include with the emailed report. You can then use the options on the Recurrence tab to define how often you want this report sent as an email to the recipients.

For more information, see the help topic [Scheduling a Report](#).

If performance of a scheduled report or saved search is abnormally slow, use Application Performance Management (APM) to analyze the search performance of users. For details, see the help topic [Analyzing Search Performance](#). If you require further assistance, submit a case to NetSuite Customer Support. For details, see [Gathering Performance Details](#).



Warning: If your report is not returning results quickly enough, **do not** repeatedly attempt to run it during the time that the original report is still running. Executing multiple reports at the same time can cause significant performance issues.

Optimize Firewalls and Proxy Servers

The following tips can be useful when setting up firewalls and proxy servers for optimal use.

Firewalls and NetSuite

A firewall is generally set up to protect your network or computer from unwanted internet traffic. The primary function of a firewall is to let good traffic pass through and block bad traffic. If your company

uses a firewall to monitor internet traffic, your network manager may need to modify the firewall to use NetSuite successfully.

If you are experiencing performance issues, pages that load slowly, or frequent time-outs, try accessing NetSuite from a location outside of the firewall. If you determine that the firewall may be a problem, try making the following changes to the firewall:

- Set up the firewall to allow all traffic to and from www.netsuite.com and any of the applicable URLs found in [Understanding NetSuite URLs](#).
- Open the following ports:
 - Port 80 for non-secure HTTP pages
 - Port 443 for secure HTTPS pages
 - Port 1708 for SuiteAnalytics Connect access

Proxy Servers and NetSuite

You should not access NetSuite using a proxy server, if possible.

When your company uses a proxy server for internet traffic, and you visit a web page from your computer, a request is sent to the proxy server for that page. The proxy server retrieves the page from the internet and forwards the page to your computer. The page may then be cached, or saved, on the proxy server's disk drive for future use. For subsequent requests of the same page, the proxy server may return the cached version of the page stored on its drive instead of accessing a current version of the page from the internet.

Cached pages returned by a proxy server can cause problems when using NetSuite, because you need to view accurate and up-to-date information about your company.

Optimize Dashboard Portlets Configuration

NetSuite provides great flexibility for dashboard configuration, giving you the freedom to include many portlets on each page. Be aware that the loading of real-time data for portlets can increase page loading times. For example, Key Performance Indicators portlets and custom saved search portlets may be slow to load.

When you are setting up a dashboard, consider the following ways to manage page loading performance:

- If you want access to a portlet's information but do not need to see it on a dashboard, consider adding a shortcut in the shortcuts portlet. For details, see the help topic [Shortcuts Portlet](#).
- If you want to include slow-loading portlets on a dashboard, you can avoid loading their data at initial page load by minimizing them.

To minimize a portlet, click the portlet's title.

The portlet stays minimized the next time you log in or refresh the dashboard. You need to click the title of the minimized portlet to display the data.