Stratusphere™ UX

Quick Start & Evaluation Guide
Introduction

This guide has been authored by experts at Liquidware in order to provide information and guidance to walk you through an evaluation of Stratusphere UX (UX stands for “User eXperience”), the VDI diagnostics and performance monitoring solution from Liquidware. This is not a complete training or user guide, but is meant to guide you through the basic steps to setup the product and to introduce you to key features, reports and capabilities, so that you can determine whether Stratusphere is suitable for your VDI monitoring needs.

During the course of this guide, you will:

✓ Learn the key components of the Stratusphere diagnostics product module
✓ Learn how to review environment inventory and configuration for desktops, applications
✓ Learn how to review resource consumption data for desktops, users and applications
✓ Learn how to generate diagnostic findings and results

This document is meant for consultants and customers who are deploying desktop virtualization in pilots or production, and who may have use for a diagnostic tool to help measure user experience or identify performance issues. Technical skills required are minimal, however familiarity with deploying virtual desktops and virtual machines is expected.

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Stratusphere UX Overview

Liquidware’s Stratusphere™ UX is an essential desktop monitoring tool for virtual desktop administrators who support mixed virtual-and-physical production environments. Existing monitoring solutions are built for legacy systems and are subsystem based with no correlation to desktop users, machine names and application names. Stratusphere UX is unique in that it uses patented technology to track real-time actual end user metrics and response data across all desktops in the enterprise by measuring a set of specialized indicator metrics.

Stratusphere UX benefits environments where virtual desktops are already in production, and administrators plan to scale the environment by:
- adding more users (and virtual desktops)
- adding users with different working habits (i.e., remote vs. in-office)
- adding more complex user desktop images (knowledge or power workers)
- running both virtual and physical desktops in their environments
- upgrading or adding new operating systems or applications

Very often, virtual desktop capacity is over-provisioned early on while there are relatively fewer users in production. However, issues arise later when organizations scale the environment and add users and/or make modifications to the images or systems. The shared-resource infrastructure makes it difficult to isolate the root cause of problems. Therefore, a solution such as Stratusphere UX becomes indispensable, because it provides visibility into areas that traditional monitoring solutions do not. Stratusphere UX allows virtual desktop managers to accomplish the day-to-day monitoring and maintenance of the virtual desktop environment with easy to use Dashboards and Inspectors. Stratusphere UX’s low price point makes it feasible to use it alongside existing enterprise or platform-specific monitoring solutions.

Stratusphere UX delivers actual user experience (UX) end user response time information such as:
- User Logon Time in Seconds
- Application Launch Time in Seconds
- Application Server Response Time (ART)
- Application Not Responding Information
- Application Usage Tracking / Installed vs. Consumed
- Network Latency / Round Trip Time (NRT)
- Network Connection Failures
- Network Connection Tracking by Port, User & Device to Device
- Disk & Network IO per Application/Process
- Disk and CPU Queues
- Visibility into TCP and UDP traffic streams and patterns
- Overall VDI UX composite metrics and score

Stratusphere UX is designed to save organizations time and money while boosting productivity. Advanced Inspectors allow administrators to proactively monitor environments and quickly drill down into potential issues to respond to Help Desk requests or other support tasks. With a large collection of standard reports, Stratusphere provides a wealth of information about your organization’s infrastructure and users as well as the ability to create customized reports. Armed with hard objective data, administrators are prepared to provide Health Checks to diagnose and troubleshoot desktop environments or user experience validation that corporate decisions are matching budgetary constraints while meeting users’ needs.
Learning the Basics of Stratusphere UX

This section introduces the key elements of the Stratusphere UX product. To log in to the product:

1. Open your browser and type https://<your-virtual-appliance-ip-address>.
2. At the web login page, select Stratusphere UX from the Product drop-down, and enter your User name and Password.

The default Administration Interface credentials for the Stratusphere Hub are:

User name: ssadmin
Password: sspassword

Note: For AWS, use your VM Instance ID for the password.

Note: For secure connections, a closed lock icon will display next to the Domain name on the Login page on the Stratusphere web user interface. Otherwise, an unlocked icon will be displayed next to the Domain name. Liquidware recommends using a secure connection when configuring Active Directory or LDAP directories. Go to the Hub Administration > Directories tab, to enable the “Use secure connection” option.
Your Troubleshooting Starting Point

The default tab in the Stratusphere UX module is the Advanced Mode Search. This is a comprehensive Google-like search that provides links to any piece of information found within the Stratusphere system over a period of time. It also provides 360° views on Users, Machines, and Applications organized by allocation, configuration, consumption, user experience, performance, environment, and trending of metrics over time.

The Advanced Mode Search offers a quick and easy method for Help Desk and first-tier admins to zero in on user experience issues while providing a great deal of relevant data. You can enter any term in the search bar to start your search. While searching “All” provides a very broad search, you can narrow your search to a specific category by selecting one of the tags under the search text box. The search also supports the use of quotes and wildcards. Click on the blue question mark next to the Search bar for help and examples.

Before we dive deeper into all the other features and capabilities of the Advanced Mode tabs, let’s start with the much simpler or basic tabs within UX first. We’ll cover more on the Advanced Mode Search and other tabs within Advanced Mode a little later in the document. Let’s take a look around the Stratusphere UX module and see how it brings visibility to the process of managing next-generation workspaces.
Diagnostics Inspectors

Click on the Diagnostics > Inspectors tab, and you will find a list of interactive reports and graphs that you can use to explore the diagnostics data. Use the drop-down at the top of the page to select the Inspector view and then click on the Go button to move to that view. You can filter the data using controls at the top of the page, and dynamically sort or drill-down using controls on the data table. Data can also be exported to PDF, XLS, and other formats.
Diagnostics Dashboards

Click on Diagnostics > Dashboards to view the new Stratusphere Dashboards. The Summary Overview provides an overview of the data collected along with real-time refreshing. The dashboard is made up of resizable widgets that provide you quick access to the information you need the most. There are several different dashboards provided out-of-the-box, but Stratusphere also offers the option to create and customize your own dashboards.
Diagnostics Reports

Click on Diagnostics > Reports to enter the Stratusphere Report Library. Stratusphere provides a large collection of standard reports which are divided into different categories. These reports are designed to provide an accurate picture of the user experience across multiple platforms from all the data that has been collected. In the Report Library, you can select and dynamically run individual reports, edit report criteria, or schedule reports to run at specific times. Note that all reports are customizable using the open source BIRT Report Designer, and you can also add your own custom reports to the library. To learn how to customize reports relevant to your specific needs as well as how to use the API in Excel to query the database, please contact your sales representative to schedule training.

Click on the View Archives link to find a list of previously generated reports on your Hub. Please note that if you have just deployed Stratusphere, there may not be any reports in the list.
To go back to the full list of available reports, click on the View Report Library link.
Diagnostics VDI UX Profile

The VDI UX Profile is part of Liquidware Labs’ patent pending VDI UX rating system which is used to continuously rate desktop and user activity on virtual desktops to help categorize the expected user experience. The rating system categorizes a desktop or user on nine metrics, each one rated Good, Fair or Poor according to thresholds defined in the profile. You can specify relative weights for each metric. To exclude a metric, just set the weight to zero. Also, you can auto-generate thresholds based on statistical measures taken from recent historical data.

To view or change the profile settings, login to Stratusphere UX and navigate to Diagnostics > VDI UX Profile. At the top of the page, you can choose to calculate thresholds based on historical data, either one time (in which case the threshold changes will not be saved until you click Save Changes) or auto-adjusted in the background on a daily basis. Note that you can recalculate VDI UX ratings for previously collected data when you Save Changes.
Inventory

Under the **Inventory** tab of the Stratusphere UX product, you can view specific information on the machines (devices), users and applications in your environment. Once you have installed your Hub and deployed Connector ID Keys to the target devices, the Inventory information will automatically begin populating. The data will be updated regularly according to the Callback Frequency defined for the Connector ID Keys. The Inventory section is also where you can create and manage groups of machines, users, and applications.

![Inventory Section](image1)

**Machines**

Use buttons or drop-down list to take action on the selected items.

Click on row to select item to edit.

![Machines Section](image2)

**Users**

Search for items by name.

Click to manage in groups.

![Users Section](image3)

**Desktop Applications**

![Desktop Applications Section](image4)
For example, you can use the Machine Inventory to view specific details about a device’s hardware, operating system, and installed applications along with patches.

1. Go to **Inventory > Machines** and select a machine. Then click on the **Edit** button.

   ![Machine Inventory](image1)

   1. View the hardware and OS configuration under the **Machine Properties** tab.

   ![Machine Properties](image2)
3. Select the **Installed Applications** tab to see more details on the software installed on the device.
Diagnostics 1: End-To-End Performance Analysis

Once you have deployed Stratusphere for monitoring and validation, you are ready to begin generating reports and analyzing the environment. This section provides information on the key Inspector views and reports from the Report Library that will help you analyze the performance of your VDI environment.

Machine Performance Analysis

To begin examining machine performance, navigate to Diagnostics > Inspectors. Select the view Top Consumer Charts in the drop-down and then click the Go button to generate the charts for your diagnostics date range. Using this chart, you can quickly identify the top resource consumers.
To see summary details for each machine, select the Inspector view **Machine Diagnostics Summary**, change the Date Range to Last 24 Hours, and click the **Go** button. This view lists more details for each machine.

To see further details, click on the drill-down button on the left side of a selected row, and drill-down to see the machine inspection history for a specific machine. This will show a breakdown for every report that the Connector ID Key sent back for the specified machine. Note that once you drill down, the machine name is automatically specified in the **Machine/Group** filter for the Inspector.

![Machine Diagnostics Summary](image-url)
To get a complete view of the machine, host, SAN, and application data gathered for the specific machine during this period, select the Inspector view **Desktop 360º View** and click **Go**.

For additional insight, run some of our standard reports in the Stratusphere Report Library. Go to **Diagnostics > Reports** and filter the reports for the time period you are analyzing.
Host Performance Analysis

To examine host performance, go to Diagnostics > Inspectors and select Hypervisor Hosts from the drop-down list of views. Then click the Go button. To see details about the machines running on a specific host, click on the drill-down button next to the Host name.
Stratusphere will switch to the **Machine Diagnostics Summary** view to show machines running on that host. Note that once you drill down, the host name is automatically specified in the **Machine/Group** filter for the Inspector.

For additional summary reports on host performance, go to **Diagnostics > Reports** and run the reports for the time period you are analyzing.
Network Performance Analysis

To gain a graphical view of network connections, with an ability to drill down on the performance data, navigate to Diagnostics > Inspectors, select the Network Connection Map from the drop-down list of views, and click the Go button. Next you will need to select one of your VMs as the Target Machine, then click the Draw Map button.
For an overall view of network performance data by application (port/protocol), select the **Network Application Summary** from the Inspector view drop-down, and click on the **Go** button. To view data for a specific application such as RDP, select the application from the filter drop-down at the top of the page.

To print reports on network performance, go to **Diagnostics > Reports** and run some of Stratusphere’s standard reports.
SAN Performance Analysis

To view SAN performance data, with an ability to drill-down and find the specific machines and applications consuming SAN, go to Diagnostics > Inspectors and select Storage Volumes from the view drop-down and click the Go button. The list of datastores is displayed, and you can drill-down to see the trend graph and the VMs (that have Connector ID Keys) using the datastore during the specified period.
Diagnostics 2: Trend Analysis and Alerts

Stratusphere UX provides extensive capabilities to analyze trends and to setup alerts that can be delivered via email or RSS. This section provides an overview of the key features.

**Trend Analysis**

To examine performance trends, navigate to Diagnostics > Inspectors and select the VDI UX Trends Chart view from the drop-down. Then click the Go button. The trend chart allows you to select the timeframe, and to select the metrics to compare on the bar charts and the line graph. You can use this chart to view trends and to see how metrics are correlated.

Select metrics to compare from drop downs. Then click on Refresh Chart link.
Alerts

Stratusphere UX also includes a set of pre-configured alert options. Alerts can be viewed in the Hub UI, delivered via email, or subscribed to using an RSS reader. To view alerts, navigate to Diagnostics > Alerts.

To configure alerts, click on the Configure Alerts button. You can specify how often Stratusphere should check alert thresholds, choose the type of alerts to configure, and set the appropriate threshold for each alert.
You can also specify one or more email address where alerts should be delivered.
In addition to threshold alerts, scheduled reports can also generate alerts once the report run is finished. This means that you can setup alerts based on existing reports in the Report Library or create custom reports and generate custom alerts. To setup an alert based on a report, navigate to Diagnostics > Reports, select a report from the list, and click on the Edit button. In the Edit form, you will need to setup a schedule to run the report and check the box to generate a custom alert. These alerts will be delivered and displayed exactly like other Alerts.
Diagnostics 3: Summary Analysis and Recommendations

The final step in using Stratusphere for VDI diagnostics and user experience analysis is to generate the summary analysis and findings reports. The VDI UX categorization (Good/Fair/Poor UX for VDI) used in many of the reports is based on the VDI UX Profile settings discussed previously while learning the basics of Stratusphere. In this section, we cover the key summary reports you can generate and use to construct your final diagnostic deliverables.

VDI UX Analysis

To examine the distribution of desktops or users falling into different categories of VDI UX (Good/Fair/Poor), go to Diagnostics > Inspectors, select the VDI UX Scatter Plot view from the drop-down list, and generate the chart. You can choose to display by Machine or by User. You can drill-down to see more details on individual users or machines by clicking on nodes on the chart. You can also choose to display Average fitness ratings or the Lowest ratings which reflect peak periods of resource consumption.
Performance Time Chart and Comparison

Two key reports that you can use to analyze the performance of a time period or to compare the performance of one-time period to another are the Performance Time Chart and the Performance Comparison reports. These reports show you key performance metrics and identify top consumers for the machines, hosts and SAN, and can be used to help identify whether there are performance problems and what might be the specific causes.

Diagnostic Findings Summary

The Diagnostic Findings report is a single summary Microsoft PowerPoint that includes graphs and data from many of the reports listed in sections above, all combined into a single report designed for you to customize and adapt to fit your needs. It includes information on the overall diagnostic data, the findings and analysis, and placeholders for your final recommendations. This report can be useful as the basis for a summary report following a VDI health check project or a VDI pilot.

To generate the report, login to Stratusphere UX and go to the Diagnostics > Reports tab. Select the UX Health Check Reports category. Check the Diagnostic Findings report in the list and click the Run button. Make any adjustments to the criteria for the report including the time period to cover. Optionally you can also specify a specific machine group or a specific user group to report on. Click OK when ready to run the report. Note that this report may take 5 minutes or more to run, depending on the period and the amount of data gathered.
The resulting file will be stored in the Reports archive, where you can access and download the PowerPoint report.

For additional diagnostic reports, run some of the standard reports in the Stratusphere Report Library. Go to Diagnostics > Reports and filter the reports for the time period you are analyzing.
Using the Stratusphere UX Advanced Mode

In Stratusphere UX the Advanced Mode provides faster and more flexible methods to view and analyze your data in detail. The Advanced Mode includes purpose-built views, drill downs, graphs and optimized queries for metric data selection. This new technology will enhance your user experience and provide you with more flexibility and power when working with your data and understanding its impact in your environment.

The Advanced Mode can be accessed directly in Stratusphere UX under the Advanced tab.

The Advanced Mode consists of several different tabs running across the top bar. These tabs correspond to different approaches that can be used to inspect the metrics data that is collected by the Stratusphere Connector ID Key agents and sent back to the Stratusphere Hub.

Advanced Mode Search

When selecting the Advanced tab, the default view is the Search tab. The Advanced Mode Search tab offers an easy-to-use front end to the Advanced Inspectors. The Search serves as a great first step in diagnosing Help Desk issues. This feature searches all the Advanced Inspectors and aggregates the data on to one screen.

Start by typing a search string and clicking the Search Now button. Valid search terms include user names, machine names, IP Addresses, application names, etc. The default is for Stratusphere to search all Advanced Inspectors. However, you can narrow the search by focusing in on an area listed below the search text box. This will limit the search parameters to the applicable area, enabling the search to execute faster.
In this case, we’ve searched for instances of the string “david” – one of the users in our demo environment. The screen below depicts the search results for this search string. The upper right corner shows the number of queries that Stratusphere has left to perform. Those queries are shown at the bottom of the screen while the search results are listed as another query finishes.

Note how Stratusphere presents you with results divided into important key areas, such as where the search string appears as a username, where the string has been connected to a machine name as well as the user groups and machine groups where this string appears. Scrolling down you may also note details on the applications, browser, disk, network, and other areas where this string appears in Stratusphere-collected metrics and information.

To hide the details of each search and show a consolidated report of what was found, click on the **Close All** button at the top of the search. To expand only one search area at a time, click on the specific search category link.
Each search result entry provides a context-aware menu that offers additional choices such as the ability to launch a related 360-degree view, replace the search with this new term, or add this term to the existing search. To see the options, click on the search result link.

In this case, we found the user’s machine name that we were looking for. Click on the Machine 360 option to get a general overview about this machine. From this Machine 360 report, we get a glimpse into the Advanced Inspector reports on this machine. From here, you can click on the Popout Inspector icon to the right of the report name to jump right to that inspector.
**Advanced Mode SpotChecks**

A SpotCheck inspection is a point-in-time analysis that focuses on key user-experience metrics. The methodology leverages known levels of acceptable performance and baselines to identify infrastructure and platform constraints that can contribute to a poor user-experience. A SpotCheck inspection takes a broad look at overall infrastructure and platform health to provide a “point-in-time” picture of resource usage and performance of the virtual or cloud environment.

A SpotCheck inspection can be performed at any time. The methodology was designed to assist in the cursory examination of architectures in immediate jeopardy as well as in systems that appear to be operating normally.

A key characteristic of the SpotCheck is that it focuses on the most important metrics that are relevant to the user-experience. It is not a comprehensive process with complete visibility of all details. Rather, the technique is used to bring issues into focus without a time-intensive diagnostic exercise.

Before jumping in, it is important to understand your business or industry as well as company and departmental elements such as work habits, seasonality, time of day, expectations, approximate system loads, core applications, etc. These elements are critical for data interpretation as well as for threshold evaluation. For example, where shift and other time-dependent staff workloads may exist, moderate-to-high storage latency may be acceptable during shift changes (with high numbers of people logging in and out). However, these storage characteristics will not be acceptable during work hours, as they will impede productivity and contribute to a negative user-experience and loss of productivity.

The Stratusphere Advanced > SpotChecks tab includes over 120 SpotCheck reports across multiple different user-experience categories. You can select to run only the reports in a particular category, or you can run the reports in all categories. Each report is evaluated against the level of thresholds selected. Stratusphere includes 3 thresholds to be set for each metric – a zero level threshold, a medium threshold, and a higher threshold.

Select your threshold level and then click on the Set Thresholds button to change the thresholds for the metrics in the UX category and threshold level you currently have selected.
You can change the comparison operator or enter a new value for the comparison metric.

Click the **Refresh** button to execute all the SpotChecks in the active/blue category after making any setting changes including thresholds, dates, etc. Once the SpotChecks finish running, they will display basic data.
Click on the **Close All** button to see a full list of each report in the category you have selected while hiding the data.

Use the icons to the right of the report name for more data. This is an example of showing more data inside the SpotCheck tab. This shows more details than the original SpotCheck report view.
This is an example of a popout inspector.

In addition to the 3 thresholds that are included with the SpotChecks, administrators can create their own thresholds and add them to the drop-down list. To create your own SpotCheck threshold:

1. Click on the green **Set Thresholds** button.
2. Filter down to the key performance indicators (KPIs) that you want to check by searching for a metric name and clicking **Apply**.
3. Check **Enable** for each KPI that you want in the SpotCheck configuration.
4. After you have filtered and selected all your KPI's, click **View** and **Show Enabled**. Adjust any thresholds to meet your SpotCheck needs.
5. Save the new threshold category using the following steps:
a. Click **Load/Save**.

b. Enter a **Menu Title**. For this example, we have “GPU KPIs Greater than 50%”. Enter a **Description** for future reference on why you created this SpotCheck and any comments on interpreting the results.

c. Check **Enabled** to access this SpotCheck Configuration in the top menu.

d. Click **Publish** if this SpotCheck Configuration should be seen in the main area of the top menu.

e. Click **Public Readable** if others should be able to see this SpotCheck in the lower portion of the top menu.

f. To create this new SpotCheck Configuration click **Save As**.

g. You will see the new threshold added to the existing list:
Advanced Mode Dashboards

The Advanced > Dashboards tab contains Stratusphere’s brand new customizable, interactive dashboards. There are 11 built-in dashboards with the ability to add and customize more dashboards based on your own criteria using customizable data sources and widgets. Users can also use the search functionality inside the dashboards to specifically look for something and constrain criteria on only what they are interested in. For more details and use cases on how to use the dashboards, please read our Stratusphere UX: Advanced Mode Dashboards Guide which can be found on the Stratusphere UX Documentation page on our Support Portal.
Using the Search Feature

The Advanced Dashboards allow you to zero in on more detail quickly by using the Search feature. Click on Search at the top of the interface. This drops down various criteria in a panel on the left for any dashboard that you select. For example, typing in a user name and hitting the Enter key refreshed all the dashboard widgets as related to that specific user.

The dashboard searches for the exact string that you enter. You may use an asterisk (*) before or after your search term to enable wildcard matching. Please be aware that the search is case-sensitive. Some search options can be configured by going to Preferences > Search.

You may use as many of the search criteria, such as User Name, Machine Name or Datastore, as you like to further constrain your search. Selections are also available to set Date or Time ranges, Resolution, and result Limits. To reset the dashboard to the default search, click on the Clear All button at the top or bottom of the search panel. To modify your search, use the search criteria and click on the Go button.
**Setting Preferences & Creating Your Own Dashboards**

Set your dashboard defaults by using the Preferences option at the top. There are options to set General and Search preferences. Any changes you make to your preferences are automatically saved.

Check **Enable Edit Mode** to create your own dashboards.
Creating a Dashboard

In order to create a new dashboard:

1. Click on the plus sign at the end of the Dashboard tabs to create a new tab.

2. Enter the new name for the dashboard, a description, who can access the dashboard for editing and the sort order. Then click on the Save button.

3. Go back to the Dashboards tab and see your new tab added to the existing Dashboards. Now you are ready to add a widget.
Adding a Widget
The next step is to add widgets to your new dashboard. To add a widget:

1. Click on the Add widget button under your dashboard.

2. This will create a widget container on your dashboard. Click on the gear inside this container to assign an existing widget to the dashboard or to create a new widget.

3. Click on the gear icon to assign the widget. Use the drop-down list to select an existing widget and then click on the Assign widget button. When back on the dashboard, click Save Dashboard to save your widget changes to the existing dashboard. We recommend saving often. If the screen is refreshed, all unsaved changes will be lost.

4. Use the arrows in the lower right of the widget to resize the widget on your dashboard according to your preferences.
Creating or Editing Widgets

Use the Widget menu option at the top of Dashboards to browse through existing widgets or to create a new widget. When creating new widgets, you will need to provide the type, the title displayed at the top, a datasource, and the columns from the data source that you wish to display in the widget. Keep in mind that it may be easier to modify an existing widget than to create a new one from scratch. You can copy an existing widget from the Browse list by clicking on the Duplicate button to the right of the widget. A copy of the existing widget will be added to the list that you can then rename and customize.

Creating or Editing Datasources

Use the Datasources menu option at the top of Dashboards to browse through existing datasources or to create a new datasource. When creating new datasources, you will need to provide among other items an API String that contains output from the Stratusphere API Builder (see API documentation or use API Builder). sort_col is REQUIRED. We recommend that you always use the following option of "rating": "2" in order to display color and formatting correctly. This string is used to get the data that will be used for creating the widget.
**Editing and Deleting Dashboards**

Use the Dashboard menu option at the top of Dashboards to browse through existing dashboards to edit or delete them.

Please note that if the **Protect System Defaults** option is checked in **Preferences > General**, then you will not be able to edit or delete the default dashboards that come with Stratusphere.
Advanced Inspectors

Understanding the Basics

The Advanced Inspector has several different options and tabs to provide the most flexibility possible in working with the Stratusphere Connector ID Key metric data collected. Within the tabs, you can select a date range, add filters, and sort data columns, among other things, in order to narrow your focus. Drilling into a specific metric will show application-specific data for that metric.

There are a few main components and concepts of the Advanced Inspectors that are important to understand when you are getting started.

1. **Inspector Views** – An Inspector View will take all the flexibility the Advanced Inspectors provide and package them together in specific Use Case views of the most popular ways you would want to look at your data. They also can apply set rules, like a specific date range on to your working Inspector.

2. **Lookup By** – This is the primary method used to view and group data within the Inspectors. This setting provides complete flexibility in how the metric data should be presented and is shown as the first column in the results table. Many options are available (User Name, Machine, OS Name, Login ID and User Groups, etc.).

3. **Search** – This feature provides a way to zero in on data faster by providing basis-specific searching which is dependent on what is selected in the Lookup By field. Wildcards can be used in this search. Use a* to find all items starting with “A”. Use quotes to find an exact match. Use “abc” (with quotes) to find only items that equal “abc”.

4. **Resolution** – This option provides the ability to group the Inspector data by date and time concepts. Most of the time you will group your data using the Lookup By setting. But if you want to see the metrics by day or by hour within a day, the Resolution will summarize the data in this way.

5. **Basis** – A basis is the method the Advanced Inspectors use for grouping data. For example, if you are looking at data by Machine Name, its primary basis as set in Lookup By would be Machines. This would be the first
column shown in the results table. You can then add additional basis data to your results by clicking on Basis. This will add additional groupings and columns. Following the machine example, you may then want to further group by User Name. You would do this by adding an additional Basis for User Name.

![Select Additional Basis Columns](image)

Select Additional Basis Columns

- Machine
  - Machines
  - Machine Groups
- User
  - Users (ID)
  - User Name
  - User Groups
- Remote
  - Remote Machine
  - Remote IP
- Login User/Name
  - Login User @ Domain
  - Login ID
  - Login Name
  - Login Domain
- Other
  - O/S Name
  - O/S Version
  - CID Version
  - GPU Model Name
- Network
  - NIC Adapter
  - NIC Addresses
  - IP Address
  - Ping IP
  - Ping Name
- Storage
  - Datastore Name (ID)
  - Datastore Name
  - Datastore Type
  - Disk Name
  - Disk Label
- Hosts
  - Current Host
  - Historic Host
  - VDirectory Name
  - VHosts (Metrics)
  - VMachines (Metrics)
- Custom Fields
  - COMPANYCODE
  - CLIENTID
Inspector Tabs

The first two Inspector tabs consist of Connector ID (CID) Key summary data. This is the user and machine specific data summarized based on the CID Key Callback Frequency interval during which it was collected and sent to the Stratusphere Hub. What is interesting about these tabs is that they are dynamic, and the headings will change to match the selection in Lookup By as shown below.

The remaining tabs are focused on additional specific types of data that the Stratusphere Connector ID Key collects:

1. **Login** – Turn on the collection of detailed Login stats while configuring Connector ID Key Properties in the Hub Administration module to get the full login process breakdown.
2. **Event Log** – Displays all Microsoft Windows Event Logs collected from CID Keys as configured under the **Hub Administration > Connector ID Keys > Connector ID Key Properties** tab. Users can specify collecting logs from Application, System, Security Logs, the Log or Severity Level (Critical, Error, Warning, Information) and/or specifying specific Event IDs to include or exclude.
3. **Applications** – Application and process data is one of the key pieces of information that Stratusphere Connector ID Keys collect and report on. Using the Applications tab, you can view and analyze the metrics specific to the applications running in your organization. In this example, the inspector looking at Adobe applications installed with the associated key application metrics shown like Application Load Time and how many machines and users are running that application.
4. **Process Name** – This tab expands per process level metrics by providing greater visibility on network connectivity, data usage, and latencies associated with each process that communicates over the network.
5. **Browser** – This tab shows browser specific metrics (domains visited, URLs, etc.) for the browser(s) selected when configuring the Connector ID Key Properties in the Hub Administration module. Microsoft Internet Explorer and Google Chrome are currently supported. Google Chrome requires the Chrome Browser Stats Extension which needs to be setup separately on the desktops for Stratusphere to gather metrics. Please see the **Stratusphere Installation & Configuration Guide** for more information.
6. **Network** – Within the Stratusphere UX system you can install separate Collectors which can monitor and capture vSphere host network traffic through a promiscuous port you define. This tab provides the ability to work with network metrics captured by each of the Collectors deployed.
7. **Remote Display** – Remote display protocols deliver remote desktops and applications to endpoints. The Stratusphere Connector ID Key can capture this information, and it is viewable in the Remote Display tab. Stratusphere works with VMware’s PCoIP, Citrix’s ICA, and Microsoft’s RDP and RemoteFX (RFX). Detailed ICA HDX metrics are also included in this tab. There are many new Views available that break connections down by protocol and provide session level settings for ICA connections. This view also provides trace route, ping and jitter metrics for remote display connections provided there is a CID Key installed on the remote client machine. *Note: The Remote Display tab will only be available if the Connector ID Key is capturing remote display data for your environment.*

8. **Trace Route** – The CID Keys can be configured to detect remote display sessions such as RDP/RFX, ICA/HDX, and PCoIP and perform trace routes from the local machine to the remote machine. If there is a CID Key installed on the source and/or destination of the actual remote display session, it will perform trace routes in both directions i.e. from thin/fat client source to the remote desktop destination, and from the remote desktop to the source thin/fat client. Ability to collect data is dependent on whether the network allows trace routes and pings to be propagated and replies being received. The trace routes are performed once per callback interval and can collect number of visible and undetermined (*) hop latencies along with the IP Address and DNS name of each hop. The CID Key also performs pings to each remote display session IP Address every sampling period and helps calculate the latency of the connection, and the jitter between each subsequent ping to determine reliability and consistency of the latency. In case of the pings, the larger the number the slower the latency and thus worse the user experience. Similarly, the larger the jitter, the worse the reliability and consistency of the connection and thus worse the user experience. This tab displays this information if it is enabled within the CID Key Properties. The information can be looked up by Destination Name, IP Address, Port, Machines, Users, and some additional basis items.

9. **Folders** – Within Stratusphere you can configure the Connector ID Key to capture folder specific information for the workstation to which the CID Key is deployed. This Inspector tab provides the ability to work with that data with information on folder sizes and file counts within those folders.

10. **Extensions** – One feature of the Stratusphere CID Key is its ability to capture data about the files located on your desktop. Within the Connector ID Key Properties, you can indicate which folders and which types of files (extensions) you want to report on. The Extensions tab provides an easy way to review this data. This tab along with the Extension Basis will show file information group by file extensions (docx, exe, pdf, ppt and others).

11. **vHosts** – This tab is also associated with the Stratusphere vCenter Import function (see VM Directories in the Hub Administration). It will display specific metrics captured for the imported vSphere Hosts.

12. **vMachines** – This tab is also associated with the Stratusphere vCenter Import function (see VM Directories in the Hub Administration). It will display specific metrics captured for the imported vSphere machines.

13. **Inventory** – The Inventory tab provides information regarding installed versus running applications and processes on the desktops. The data can be viewed by either Machines or Applications.

Inspector Graphs

For most of the Advanced Inspector tabs and views there are several graphs available. They provide you with the ability to quickly understand your data in a graphical format and to drill down for more detailed information. Graphs can be toggled on or off when viewing Inspector data.

One graph feature that is important is the use of graph tip windows. In this example, Workload Ranking is plotted on the graph as a line behind the bars. The Workload Ranking is a composite metric looking at various CPU, Memory, Disk I/O and Network I/O metrics that the Stratusphere Connector ID Key collects.

When you mouse over the individual bars on the graph, the graph tip window pops up to show the detailed metrics like Login Delay and Network Latency that make up a Workload Ranking as well as the overall UX score. Hovering the mouse over the actual Workload Ranking line in the graph highlights the Workload Ranking metric in the graph tip window.
Other Key Functionality

The Advanced Inspectors user interface provides a significant amount of flexibility in how you want to view and work with your data. Several additional key options that help provide this flexibility include:

✓ Filters - The Custom Filters option gives you more granular control over exactly what information is critical to your analysis. You can filter by specific metrics as well as values for those metrics.

✓ Date Range Lookups – The Date Range options provide two types of functionality when determining what range of data, you want to analyze. You can select from the many pre-defined range options like Today, Yesterday, Last 7 Days, Last 30 days and more, or you can set a Custom Date range by clicking on the calendar icon or selecting the Custom Date option.

   \[\text{Date Range:} \quad \boxed{00:23 - \text{Yesterday}}\]

   Note: The Custom Time option defines the time range within the dates selected. For example, show me metric data during working hours (8 to 5) over the last week.

✓ Application Drill Down Popups – Within the results table, you can click on many of the metrics to drill down to application specific data related to the metric you selected. For example, if you saw a high Disk IOPS value for a user, you could click on that value to see the applications and processes running for that user that are driving the IOPS value.

✓ Table Specific Drill Down Ability – Within any Inspector result table, you can click on the primary basis (first) column and drill down into a more detailed view of that data. For example, if you are looking at Users for yesterday and you click on a specific user, you will then see metrics for that user broken down by hour. If you click on one of the hours given as the new primary basis, you will see the specific CID Key callback reports for that hour. This drill down ability is changing the Resolution of the Inspector.

✓ Search Functionality – The Advanced Inspectors provide search capabilities that enable you to search for specific data or information within your results such as a specific user or a machine. The search focuses on the basis for the displayed table making searches faster and more flexible. To search in additional columns, add them as a basis to the table.

✓ Col Search – The Advanced Inspectors provide an ability to the user to search for all columns with a particular search string. So, if a user wanted to see all columns (actual column names and display column name) that were related to CPU and Memory, they can enter ‘cpu mem’ as First Match search criteria. The column search will return all columns that contain the search fields with cpu and mem in them. This overrides the columns in the table within the view. If you do NOT want any gpu related columns the search
term can be ‘cpu mem -gpu’. If you then want only fields that have avg or peak or peak1 etc. in them, then you can use the Second Match field to add additional criteria to filter additional columns.

✓ **Color** – When analyzing metric data, you want to be able to quickly identify problem areas as well as areas that are functioning well. Advanced Inspectors have Color Profiles to help highlight data metrics by coloring cells using green for good, red for poor, etc. Choose from None, Default VDI UX/FIT, FIT or UX.

✓ **Pop out Inspector** – This takes the current Inspector and result data being viewed and opens it in a new browser window.

✓ **Data Export** – You can export your Inspector results table data to Excel using a unique Cut & Paste Export option or the Spreadsheet option.
Advanced Mode Trends & Top Consumers

The Advanced > Trends & Top Consumers tab is another great place for monitoring your environment. It provides a sweeping view of your data, gathering many different types of metric graphs that are available within the Advanced Inspectors in one place. For more details and use cases on how to use the trend dashboards, please read our Stratusphere UX: Advanced Mode Dashboards Guide which can be found on the Stratusphere UX Documentation page on our Support Portal.

These key metric graphs are grouped together to form dashboards. The Trend & Top Consumers tab offers three major types of dashboards: Overview Trend, Compare Trend, and Top Consumers. Overview Trend dashboards display metrics primarily for the current day. These dashboards use a single resolution for all the graphs and are good graphs to choose when you want to look at what is occurring now. Compare Trend dashboards display a fewer number of different key metrics but show how they change over time. Compare Trend dashboards use three different resolutions to display historical data. For example, you can see a metric shown for today in the first graph, over the last day in the second graph, and with that same metric shown over the last 7 days in a third graph. Top Consumer dashboards display metrics over time using simple but data-intense sparklines along with matching charts of data. Hovering your mouse over the sparklines reveals a pop-up window with more detailed information about each specific data point.

To change between the various dashboards, click on the gear icon 🛠 at the top, left of the tab. This opens the Dashboard Control Widget which allows you to choose which dashboard to display. In addition to being able to select a different dashboard, there are other options available to customize how you work with and view the available graphs on the tab. The search function allows you to quickly zero in on needed information by entering a specific user, machine, or application. Other options for customizing your dashboard graphs will depend on the type of dashboard chosen for display.
The top, left corner on each of the graphs in the dashboard is important. On Top Consumer sparkline dashboards, you can click on the icon to pop out the associated Advanced Inspector for more details, or you can click on the link to refresh an individual graph widget. In the top, left corner of each graph on the Overview Trend and Consumer Trend dashboards you will notice a plus sign icon. Clicking on this icon opens the Graph Controls. Here you have complete flexibility to alter how the graph is displayed, so can view your data exactly how you want to for the chosen graph. A lot of the graph functionality is at your fingertips including the ability to change your resolution, data range, scale for both the X and Y axis and more. To view a full-size version of a graph, just click on it.
**My Tab**

This tab holds a copy of all the spreadsheets you have exported from Stratusphere. Stratusphere will store up to 512 MB of exported data. Stratusphere checks the data storage usage each hour. If the storage space threshold has been exceeded, Stratusphere will automatically delete exported spreadsheets in order from oldest to newest until the data storage is under the 512 MB threshold.

**Preferences**

Through the Preferences tab you can customize some aspects of the Advanced Inspector User Interface. For example, if you don’t want to use colors, you can turn them off. Or if you prefer a different font size for the Inspector table, you can change to your favorite size.

**Advanced Inspectors Help**

There is a vast amount of help information built directly into the Advanced Inspectors. For options and various functions of the Inspectors help, click the question mark next to the option for specific help.

In addition, moving your mouse over any of the metric column headings in the Inspector result tables pops up help information specific to that column. The figure below shows a help description for Disk IOPS.
There is also built in information and an FAQ page. To access this information, click the question mark link at the top right of the Advanced Inspector web page which provides an overview of Advanced Inspector concepts as well as Frequently Asked Questions.

Want to see more? We have several good blogs discussing various topics about the Stratusphere Advanced Inspectors (formerly known as the Preview Inspectors) on the Liquidware blog site.
Breaking Down the User Login Process

Being able to understand and identify issues around the complex process of the user login is an important task for IT administrators. As the desktop is being setup for the user, there are a lot of individual operations transpiring at login. If any operation fails or if there is a bottleneck, a user can experience significant delays. When users report slow logins, it’s important to find the source of the problem. In addition, being able to proactively identify these is growing more important.

Now Stratusphere provides detailed event tracing of the Windows login process by measuring and reporting on items like:

- Boot Delay
- Login Delay
- Domain Controller Access
- Computer and User GPOs
- GPO client extension names and load times
- Roaming Profile load times
- Time to Restore Network Connections and processes that start and end between each step of the login process

You can trend this information for the user, machine or a pool level by using machine groups.

Capturing the all the login details is an optional setting you can turn on when you configure your Connector ID Keys. Please see the Stratusphere Installation and Configuration Guide for more details.

Once the CID Keys in your environment are returning login data, you can use the Advanced Inspectors to provide more data on the login process breakdown. A great place to start is with an overview of logins in your environment. From the Advanced > Trends & Top Consumers > Top Consumers tab, click on the gear icon to select the Desktop > Login dashboard.
The Login sparkline dashboard shows the duration and counts of each main step of the Windows login process. You can search for a specific user or machine or view all records averaged by date/hour.

From the **Advanced > Inspectors > Login** tab you can see a Boot and Login delay for your users.
To drill down to a specific user, click on the user’s name in the chart. At this point you still see an overview, but it is isolated to just this user.

Now click on the specific login time that you want to drill down into. Each login for the time period you have selected will be listed. To change your span of time, select your Date Range at the top of the tab. Drilling down into a specific login will list each main step of the login process showing the duration and highlighting errors.
Clicking on the **Boot Delay** step in the login process and sorting based on Duration shows TrustedInstaller took the most time. This login most likely took longer because it was finishing a Windows Update.

Clicking on another step, in this case Computer Group Policy Service, shows a detailed breakdown of what is happening during the user login.
Getting Help with Stratusphere

In this document, we have covered a complete set of steps to evaluate the Stratusphere product for use in VDI monitoring and diagnostics. You have been introduced to the data gathering, analysis and reporting steps, and you have seen the advanced features of Stratusphere for VDI monitoring, analysis and planning.

If you have questions or run into issues while using Stratusphere, Liquidware is here to help. Our goal is to provide you with the knowledge, tools, and support you need to be productive.

Using Online Resources

Liquidware maintains various kinds of helpful resources on our Customer Support Portal. If you have questions about your product, please use these online resources to your full advantage. The Support Portal includes product forums, a searchable Knowledge Base, documentation, and best practices among other items. You can visit our website at https://www.liquidware.com.

Contacting Support

If you wish to contact our Support staff for technical assistance, please either log a request on the Liquidware Customer Support Portal or give us a call. Prior to Logging a Case you may want to review these helpful tips:

- Check the Product Documentation included with your Liquidware Labs Product.
- Try to see if the problem is reproducible.
- Check to see if the problem is isolated to one machine or more.
- Note any recent changes to your system and environment.
- Note the version of your Liquidware product and environment details such as operating system, virtualization platform version, etc.

To speak directly with Support, please use the following numbers:

**Main Line:**  1-678-397-0460

**Toll Free in US & Canada:**  1-866-914-9665

**Europe/Middle East/Africa:**  +44 800 014 8097

**Toll Free in Europe**

- **UK:**  0800 014 8097
- **Netherlands:**  0800 022 5973
- **Switzerland:**  0800 561 271