



## **Stratusphere™ FIT**

***Quick Start &  
Evaluation Guide***

## Introduction

This guide has been authored by experts at Liquidware to provide information and guidance to walk you through an evaluation of Stratusphere FIT, the desktop assessment solution from Liquidware. This is not a complete training or user guide but is meant to guide you through the basic steps and introduce you to key features, reports and capabilities, so that you can determine whether Stratusphere is suitable for your desktop assessment and VDI fitness scoring needs.

During the course of this guide, you will:

- ✓ Learn the key components of the Stratusphere assessment module
- ✓ Learn how to review desktop configuration and application inventory
- ✓ Learn how to review resource utilization data for desktops, users and applications
- ✓ Learn how to generate assessment 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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# Contents

- STRATUSPHERE FIT OVERVIEW ..... 4**
- LEARNING THE BASICS OF STRATUSPHERE FIT ..... 5**
  - ASSESSMENT DASHBOARD ..... 6
  - INSPECTORS ..... 7
  - REPORTS ..... 8
  - VDI FIT PROFILE ..... 10
  - INVENTORY ..... 11
- ASSESSING DESKTOP CONFIGURATION & APPLICATION INVENTORY ..... 15**
  - DESKTOP CONFIGURATION DATA ..... 15
  - APPLICATION INVENTORY DATA ..... 16
- ASSESSING RESOURCE UTILIZATION BY DESKTOP, USER, AND APPLICATION ..... 17**
  - DESKTOP RESOURCE UTILIZATION ..... 17
  - USER RESOURCE UTILIZATION ..... 19
  - APPLICATION RESOURCE UTILIZATION ..... 20
- PREPARING THE SUMMARY ANALYSIS AND CREATING RECOMMENDATIONS ..... 21**
  - VDI FIT ANALYSIS..... 21
  - APPLICATION VIRTUALIZATION CANDIDATES..... 22
  - ASSESSMENT FINDINGS SUMMARY ..... 22
- USING THE STRATUSPHERE UX ADVANCED MODE ..... 23**
  - ADVANCED MODE SEARCH ..... 23
  - ADVANCED MODE SPOTCHECKS ..... 27
  - ADVANCED MODE DASHBOARDS ..... 32
    - Using the Search Feature ..... 33*
    - Setting Preferences & Creating Your Own Dashboards..... 34*
    - Creating a Dashboard ..... 35*
    - Adding a Widget..... 36*
    - Creating or Editing Widgets ..... 37*

<i>Creating or Editing Datasources.....</i>	<i>37</i>
<i>Editing and Deleting Dashboards.....</i>	<i>38</i>
ADVANCED INSPECTORS .....	39
<i>Understanding the Basics.....</i>	<i>39</i>
<i>Inspector Tabs .....</i>	<i>41</i>
<i>Inspector Graphs .....</i>	<i>43</i>
<i>Other Key Functionality.....</i>	<i>44</i>
ADVANCED MODE TRENDS & TOP CONSUMERS .....	46
MY TAB .....	48
PREFERENCES .....	48
ADVANCED INSPECTORS HELP.....	49
<b>BREAKING DOWN THE USER LOGIN PROCESS .....</b>	<b>50</b>
<b>PROCESS OPTIMIZATION .....</b>	<b>54</b>
<b>GETTING HELP WITH STRATUSPHERE.....</b>	<b>55</b>
USING ONLINE RESOURCES.....	55
CONTACTING SUPPORT .....	55

## Stratusphere FIT Overview

Liquidware's Stratusphere™ FIT is an essential desktop assessment solution for architects, consultants, partners, and system integrators who need to capture information regarding how hardware and software resources are currently being used in the existing infrastructure. Typically, organizations do not have an accurate picture of what users have on their desktops or which resources are being utilized to be able to make optimal design decisions that will boost productivity. Stratusphere FIT's patented technology also provides overall VDI FIT composite scores that rate users, machines, and applications to find those resources that are a best fit with virtualization.

Stratusphere FIT applies to physical and virtual desktop environments and allows organizations to:

- Assess and baseline users, applications and infrastructure
- Measure endpoint to datacenter network latency
- Rate user and application fitness levels: Good/Fair/Poor
- Capacity plan CPU, Memory & IOPS per application
- Support the design of optimum shared-image strategy
- Create remediation plans before you migrate desktops

Without an assessment before a project begins, organizations are highly likely to either allocate minimum resources to the target environment, leading to performance problems later, or over-provisioned resources, incurring higher costs.

Stratusphere FIT collects key metrics and configuration data to provide comprehensive information about the current state of the infrastructure including:

- Current hardware & software configuration
- Overall performance
- Granular resource utilization
- External devices connected
- Application utilization
- Network viability for virtual desktop sessions
- Network connectivity to potential remote systems
- Baseline user experience

Stratusphere FIT is designed to provide organizations with a sound assessment foundation on which they can make solid planning decisions and will be able to set baselines to validate success at the end of a project. Basing design decisions on objective data avoids system downtime and stalled projects or proofs of concept. Identifying resource constraints reveals the need to create remediation plans to resolve these issues proactively rather than later when issue becomes an urgent need. In addition, Stratusphere FIT assesses application and resource utilization, finding any application licenses that are not being used or resources that are over-provisioned. Proper capacity planning provides the right-sized environment that saves organizations money.

## Learning the Basics of Stratusphere FIT

This section introduces the key elements of the Stratusphere FIT 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 FIT 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.*

Product	Valid until	License Details
✓ Stratusphere FIT	Forever	734/unlimited machines, 244/unlimited users
✓ Stratusphere UX	Forever	734/unlimited machines, 244/unlimited users, 12/100 collectors

Contact [sales@liquidware.com](mailto:sales@liquidware.com) for additional licensing needs.

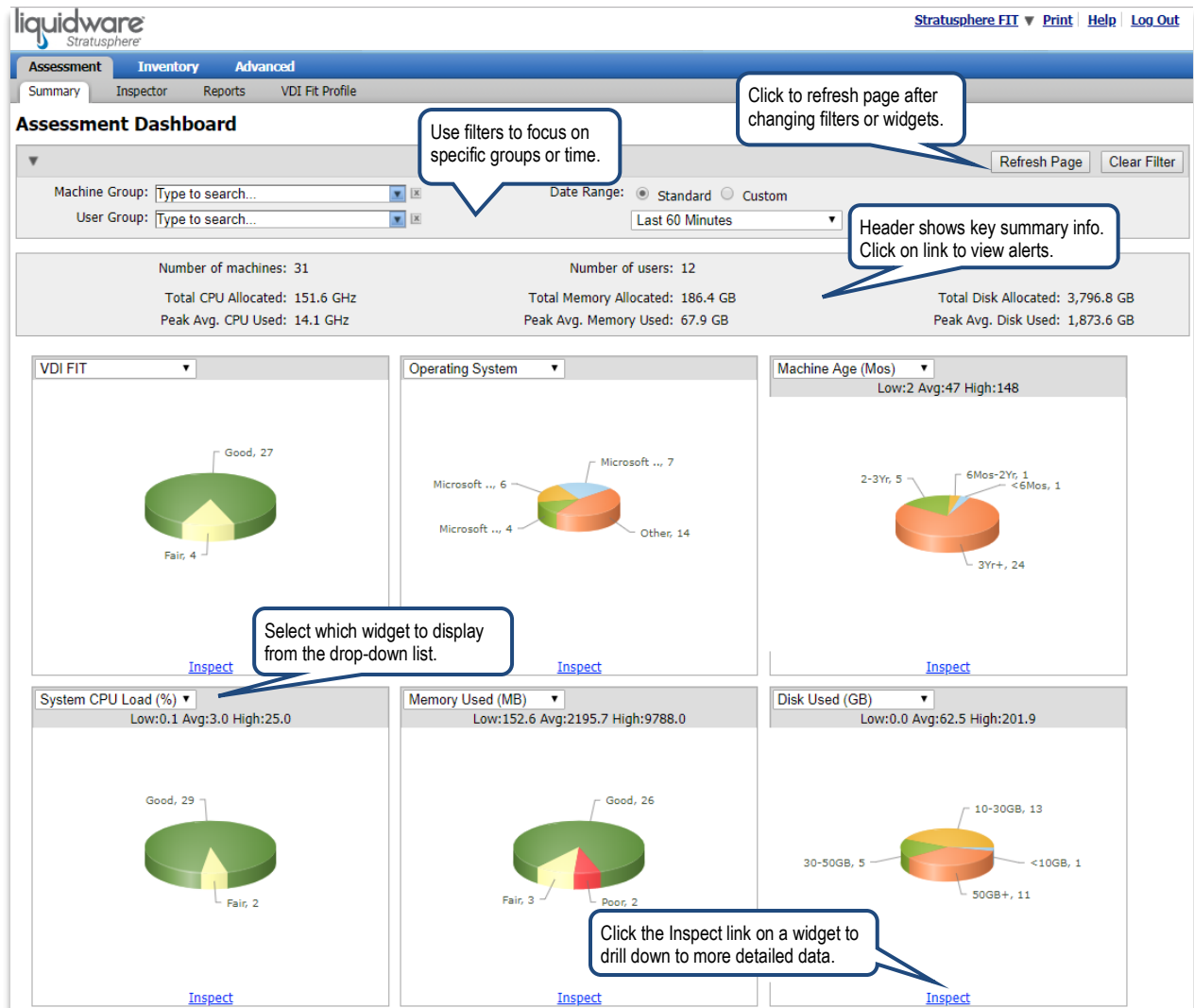
Version: 6.1.3      Licensed to Liquidware Labs, Inc.      © 2019 Liquidware Labs, Inc.

**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.

The Login Page will display urgent notifications to end users so they are aware prior to logging into the product. These messages will be displayed above the login credentials.

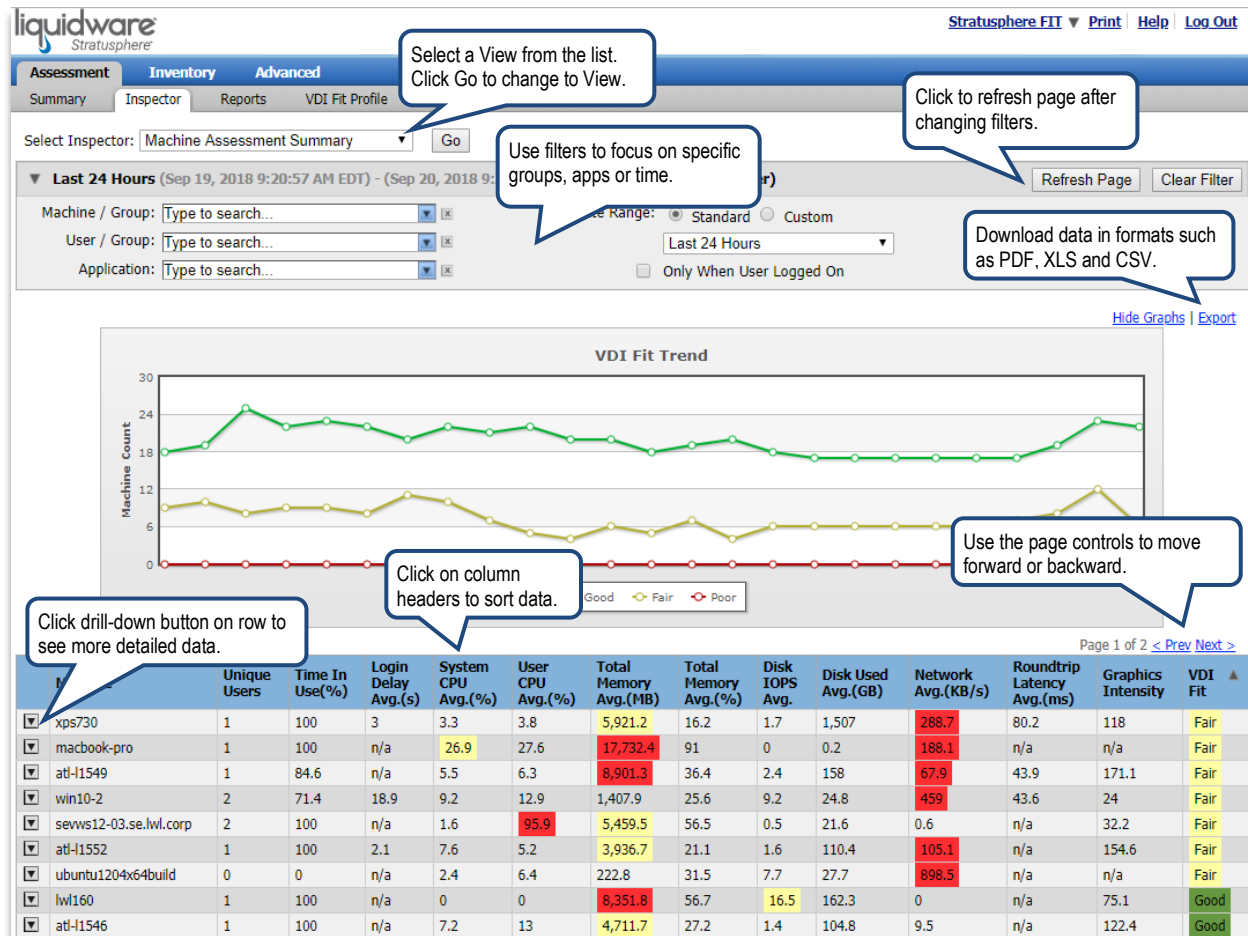
## Assessment Dashboard

The first thing you see after logging into Stratusphere FIT is the FIT Assessment Dashboard. This provides a summary overview of the data collected along with real-time refreshing and drill-down options. The dashboard is made up of widgets that provide you quick access to the information you need the most. Use the filters at the top of the dashboard or inspect a widget to narrow your focus.



## Inspectors

Click on the **Assessment > Inspector** tab, and you will find a list of interactive reports and graphs that you can use to explore the assessment 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.





## Reports

Click on **Assessment > 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 visibility into the current state of the infrastructure and a baseline of the current 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.

The screenshot shows the Stratusphere Report Library interface. At the top, there are tabs for Assessment, Inventory, and Advanced. Under Assessment, there are sub-tabs for Summary, Inspector, Reports, and VDI Fit Profile. The Reports tab is selected. A callout points to the 'Edit' button, stating: 'Select **Edit** to change default report parameters, output format, set schedule or generate alert.'

The main section is titled 'Report Library' and shows a list of reports. A callout points to the 'Search Archives' button, stating: 'Click on row to select report. Then click on **Search Archives** to find previous runs or click on **Run** to generate report.'

Below the table, a callout points to the 'Showing 1 - 14 of 14' widget, stating: 'Choose the number of items to show per page.'

On the right side, a callout points to the 'Page 1 of 1' widget, stating: 'Use the page widget to go to a specific page.'

Category	Report	Schedule	Supported Formats	Archived	Criteria
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	101. VDI FIT By User Group		PDF, XLS	1	Yesterday (prior calendar day)
<input checked="" type="checkbox"/> FIT Assessment Reports (Pack 1)	102. VDI FIT by User		PDF, XLS	1	Yesterday (prior calendar day)
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	103. Application Assessment Summary		PDF, XLS	1	Yesterday (prior calendar day), Threshold 0
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	104. Applications Installed Vs. Used Summary		PDF, XLS	1	Yesterday (prior calendar day)
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	105. Applications Installed Vs. Used Summary		PDF, XLS	1	Last 24 Hours
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	106. Applications Installed Vs. Used Summary		PDF	1	Yesterday (prior calendar day)
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	107. Applications Installed Vs. Used Summary		PDF, XLS	1	Last 24 Hours
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	108. Applications Installed Vs. Used Summary		PDF, XLS	1	Last 24 Hours
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	109. Design Estimates for Capacity and Performance		PDF	1	Last 24 Hours
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	110. ROI on VDI with ProfileUnity & Stratusphere UX		PDF	1	
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	111. VDI FIT by User Group		PDF, XLS	2	
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	112. VDI FIT by User Group		PDF, PPT	1	
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	113. VDI FIT by User Group		PDF	1	Yesterday (prior calendar day)
<input type="checkbox"/> FIT Assessment Reports (Pack 1)	114. VMware Horizon View Capacity & Performance Estimate		PDF	1	Last 24 Hours

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.

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Assessment Inventory Advanced

Summary Inspector Reports VDI Fit Profile

Reports Category: Administration Page 1 of 1 < Prev Next >

Start Date: 09/19/18 9:42 AM  
End Date: 09/20/18 10:42 AM  
Date = mm/dd/yyyy; Time = hh:mm, hh:mm am, or hh:mm pm

Filter report view based on when reports were run.

Always refresh your view after changing any filters.

Refresh View

Selected 1: Download Delete Unselect View Report Library Manage Categories Quick Search Search

Run Date	Category	Report	Status	Owner	Time to run	Criteria
Sep 20, 2018 8:00:00 AM EDT	Administration	Alert On Database Disk Purge Prior to Threshold	Complete	Scheduled	0 m 5 s	
<input checked="" type="checkbox"/> Sep 20, 2018 7:00:00 AM EDT	Administration	Machines Overdue for Agent Callback	Complete	Scheduled	0 m 5 s	Period 9/19/18 7:00 AM to 9/20/18 7:00 AM, Threshold 24
Sep 20, 2018 7:00:00 AM EDT	Administration	Stratusphere Collectors Status	Complete	Scheduled	0 m 5 s	Period 9/19/18 7:00 AM to 9/20/18 7:00 AM, Station group Default Collector Group
Sep 20, 2018 7:00:00 AM EDT		IT Errors	Complete	Scheduled	0 m 5 s	Period 9/19/18 7:00 AM to 9/20/18 7:00 AM
Sep 20, 2018 7:00:00 AM EDT		Log Errors	Complete	Scheduled	0 m 5 s	Period 9/19/18 7:00 AM to 9/20/18 7:00 AM

Click on row to select your report to view. Then click **Download**.

Showing 1 - 5 of 5 Page 1 of 1 < Prev Next >

To go back to the full list of available reports, click on the **View Report Library** link.

## VDI FIT PROFILE

The VDI FIT Profile is part of Liquidware's patent pending VDI FIT rating system which is used to continuously rate desktop and user resource utilization on physical desktops versus how well that would fit on virtual desktops. The rating system categorizes a desktop or user on eight 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 identify specific applications that are known to be a poor fit on virtual desktops. Then any time the application is detected in use, Stratusphere will automatically categorize the user and desktop as a poor fit for virtual desktops.

To view or change the profile settings, login to Stratusphere FIT and navigate to **Assessment > VDI FIT Profile**. You can adjust profile ratings after your data collection is complete and recalculate VDI FIT for the collected data.

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Assessment Inventory Advanced

Summary Inspector Reports VDI FIT Profile

### VDI FIT Profile

#### Machine Resource FIT Indicators

	Weight (%)	Good	Fair	Poor
System CPU Load : 20	0	<= 15	<= 30	<= 100 %
Avg. system CPU % Used ?				
User CPU Load : 20	0	<= 30	<= 70	<= 100 %
Avg. user CPU % Used ?				
Memory Used : 20	0	<= 3,500,000	<= 7,500,000	<= unbounded
Avg. memory KB Used ?				
Graphics Intensity : 20	0	<= 200	<= 500	<= unbounded
Avg. number of GDI objects initialized ?				
Monitors in Use : 20	0	<= 1	<= 2	<= unbounded
Number of displays connected ?				

#### I/O Resource FIT Indicators

	Weight (%)	Good	Fair	Poor
Disk Load : 33	0	<= 15	<= 85	<= unbounded
Avg. disk IO per second ?				
Network Load : 33	0	<= 20	<= 60	<= unbounded
Avg. network KB per second ?				
Network Latency : 34	0	<= 50	<= 150	<= unbounded
Avg. network roundtrip time (ms) ?				

#### Known Applications With Poor VDI FIT

Application

Microsoft Office 365 - en-us (16.0.10228) Remove

Type to search... Remove

[Add an application](#)

☒ Do not recalculate VDI FIT for previously saved data

☐ Recalculate VDI FIT for data from [ ] to [ ]

Save Changes Cancel

Set weight to zero to exclude a metric.

## Inventory

Under the **Inventory** tab of the Stratusphere FIT 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.

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

Click on row to select item to edit.

Name	IP Address	Make	Model	Directory	Type	OS Version	Host	VM Directory	Connector ID Key Version	Created On	Last Contact	Uptime	Pending Reports
joycentos7	10.10.2.182	Hewlett-Packard	HP EliteBook 850 G2	Local Directory	Physical - Notebook	CentOS Linux release 7.3.1611 (Core)			Standard 64b 6.0.0-1	Jun 29, 2017 8:36:43 AM EDT	Sep 18, 2017 8:48:25 AM EDT	19 day 23 hr 12 min	0
centos7-1	67.173.172.131	Microsoft Corporation	Virtual Machine	Local Directory	Hyper-V	CentOS Linux release 7.4.1708 (Core)			Standard 64b 6.0.0-4	Jan 5, 2018 9:55:59 AM EST	Jan 5, 2018 9:47:38 PM EST	4 hr 11 min	0
localhos			Virtual Machine	Local Directory	Hyper-V	CentOS Linux release 7.4.1708 (Core)			Standard 64b 6.0.0-1	Dec 25, 2017 7:24:46 PM EST	Sep 18, 2018 6:36:24 PM EDT	18 day 21 hr 50 min	0
MattWin1032	10.0.81.69	VMware, Inc.	VMware Virtual Platform	Local Directory	VMware	Microsoft Windows 10 Enterprise	sevs04.se.lwl.corp	SE.lwl.corp	Standard 6.0.0-3	Nov 13, 2017 3:36:54 PM EST	Nov 21, 2017 12:04:47 PM EST		0

Search for items by name.

Click to manage in groups.

Username	Directory	Role	Enabled	Locked	Last Login	Last Login From	Created On
ISTest@lwdemocenter.local	Local Directory	User	No	No	Jul 25, 2017 10:46:23 AM EDT	91aae9b47d1c8be.lwdemocenter.local	Jul 21, 2017 1:56:25 PM EDT
bmoore@se.lwl.corp	Local Directory	User	No	No	Jul 25, 2017 1:09:37 PM EDT	sevs12-01.s	Jul 25, 2017 1:09:44 PM EDT
njeans@lwl.corp	lwl.corp	Administrator	Yes	No	Aug 11, 2017 10:34:10 AM EDT	atl-11532.lwl.c	Aug 26, 2017 7:07:21 PM EDT
demouser3@lwdemocenter.local	Local Directory	User	No	No	Aug 26, 2017 12:20:45 PM EDT	JM-ProULWLLwL.c	Aug 26, 2017 12:13:19 PM EDT
demouser4@lwdemocenter.local	Local Directory	User	No	No	Aug 26, 2017 12:20:48 PM EDT	JM-ProULWLLwL.c	Aug 26, 2017 12:18:31 PM EDT
demouser6@lwdemocenter.local	Local Directory	User	No	No	Aug 26, 2017 12:35:29 PM EDT	JM-ProULWLLwL.c	Aug 26, 2017 12:32:58 PM EDT

Application Name	Version	Machines Installed On	Estimated size (KB)	Installs Services	Installs Device Drivers	Provides DCOM Services	Has Shell Extensions	Include for Virtualization	System Application	Processes
GoogleCrashHandler	Unknown	12				No	No	No	No	googlecrashhandler.exe
GoogleCrashHandler64	Unknown	10				No	No	No	No	googlecrashhandler64.exe
GoogleUpdate	Unknown	24				No	No	No	No	googleupdate.exe, GoogleUpdate
Grab	1.10	18	1,545			No	No	No	No	
Grab	1.8	1	1,976			No	No	No	No	
Grab	1.9	4	2,140			No	No	No	No	
Grammarly	Version 1.5.29	1	136,881			No	No	No	No	

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.

The screenshot shows the Liquidware Stratusphere FIT interface. The top navigation bar includes 'Assessment', 'Inventory', and 'Advanced'. The 'Machines' tab is selected. Below the navigation bar, there's a toolbar with buttons: 'New', 'Selected', 'Edit' (circled in red), 'Add To Group', 'Delete', 'Unselect', and 'More actions...'. The 'View: Individual Machines | Groups' dropdown is set to 'Individual Machines'. A 'Quick Search' field is also present. The main area displays a table of machines with the following columns: Name, IP Address, Make, Model, Directory, Type, OS Version, Host, VM Directory, Connector ID Key Version, Created On, Last Contact, Uptime, and Pending Reports. The table contains four rows of data. The third row, for machine 'hd-11532', has its checkbox circled in red.

Name	IP Address	Make	Model	Directory	Type	OS Version	Host	VM Directory	Connector ID Key Version	Created On	Last Contact	Uptime	Pending Reports
FA Storage	0.0.0.0			Local Directory	VMware		sevs03.se.lwl.corp	SE.lwl.corp		Sep 17, 2017 10:52:10 AM EDT			
XP_Master_2010	0.0.0.0			Local Directory	VMware		sevs02.se.lwl.corp	SE.lwl.corp		Sep 16, 2017 10:52:09 AM EDT			
hd-11532	24.125.96.73	Hewlett-Packard	HP EliteBook 840 G1	Local Directory	Physical - Notebook	Microsoft Windows 10 Pro			Standard 64b 6.0.0-1	Jul 7, 2017 6:54:56 PM EDT	Aug 11, 2017 10:57:24 AM EDT	25 min	0
profunview2	165.166.57.242	VMware, Inc.	VMware Virtual Platform	Local Directory	VMware	Microsoft Windows 7 Professional , Service Pack 1			Standard 64b 6.0.0-1	Sep 27, 2017 6:43:51 PM EDT	Oct 2, 2017 11:36:57 AM EDT	4 day 6 hr 39 min	0

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

The screenshot displays the Liquidware Stratusphere FIT web interface. At the top, the 'Stratusphere FIT' logo is on the left, and navigation links for 'Print', 'Help', and 'Log Out' are on the right. Below the logo, a blue navigation bar contains 'Assessment', 'Inventory', and 'Advanced' tabs. Under 'Inventory', there are sub-tabs for 'Machines', 'Users', and 'Applications'. The main content area is titled 'Edit Machine: atl-11532.lwl.corp'. Below this title, there are four tabs: 'Machine Properties' (highlighted in green), 'Machine Group Membership', 'Connector ID Key Properties', and 'Installed Applications'. The 'Machine Properties' tab is expanded, showing two sections: 'User Editable Properties' and 'Other Properties'. The 'User Editable Properties' section contains four input fields: '\* Name' (atl-11532), '\* Fully Qualified Name' (atl-11532.lwl.corp), '\* IP Address' (24.125.96.73), and 'Description' (empty). At the bottom of this section are 'Save Changes' and 'Cancel' buttons. The 'Other Properties' section is divided into two columns. The left column lists system information: OS (Microsoft Windows 10 Pro), CPU (Intel(R) Core(TM) i7-4600U CPU @ 2.10GHz, 2 cores), GPU (Intel(R) HD Graphics Family; Microsoft Basic Render Driver; AMD Radeon HD 8750M), Age (434 days), Make (Hewlett-Packard), Model (HP EliteBook 840 G1), Serial # (5CG5162486), VM Directory (n/a), VM Hosted on (n/a), Fully Qualified Machine Name, Connector ID Key Version (Standard 64b 6.0.0-1), Bios Manufacturer (Hewlett-Packard), Bios Version (L71 Ver. 01.40), TPM enabled (true), TPM active (true), TPM owned (true), and TPM Specification version (4.32). The right column lists hardware and device information: Monitors (1920 x 1080), Disks, Printers (6 local; 4 network [view details](#)), NICs, Other devices (a long list of USB and Bluetooth devices), Last Contact (Aug 11, 2017 10:57:24 AM EDT), and Creation Date (Jul 7, 2017 6:54:56 PM EDT).

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Assessment | Inventory | Advanced

Machines | Users | Applications

**Edit Machine: atl-11532.lwl.corp**

Machine Properties | Machine Group Membership | Connector ID Key Properties | Installed Applications

**▼ User Editable Properties**

\* Name: atl-11532

\* Fully Qualified Name: atl-11532.lwl.corp

\* IP Address: 24.125.96.73

Description:

Save Changes | Cancel

**▼ Other Properties**

OS: Microsoft Windows 10 Pro

CPU: Intel(R) Core(TM) i7-4600U CPU @ 2.10GHz, 2 cores;

GPU: Intel(R) HD Graphics Family; Microsoft Basic Render Driver; AMD Radeon HD 8750M;

Age: 434 days

Make: Hewlett-Packard

Model: HP EliteBook 840 G1

Serial #: 5CG5162486

VM Directory: n/a

VM Hosted on: n/a

Fully Qualified Machine Name:

Connector ID Key Version: Standard 64b 6.0.0-1

Bios Manufacturer: Hewlett-Packard

Bios Version: L71 Ver. 01.40

TPM enabled: true

TPM active: true

TPM owned: true

TPM Specification version: 4.32

Monitors: 1920 x 1080;

Disks:

Printers: 6 local; 4 network [view details](#)

NICs:

Other devices: USB:Generic USB Hub; USB:Intel(R) Wireless Bluetooth(R); USB:Microsoft Bluetooth LE Enumerator; USB:Bluetooth Device (RFCOMM Protocol TDI); USB:Microsoft Bluetooth Enumerator; USB:Bluetooth Device (Personal Area Network) #3; USB:Generic USB Hub; USB:USB Composite Device; USB:HP HD Webcam; USB:Validity Sensor; USB:Generic SuperSpeed USB Hub; USB:USB Root Hub (USB 3.0); USB:USB Input Device; USB:HID-compliant mouse;

Last Contact: Aug 11, 2017 10:57:24 AM EDT

Creation Date: Jul 7, 2017 6:54:56 PM EDT

3. Select the **Installed Applications** tab to see more details on the software installed on the device.

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Assessment Inventory Advanced

Machines Users Applications

Edit Machine: atl-11532.lwl.corp

Machine Properties Machine Group Membership Connector ID Key Properties **Installed Applications**

Search

Application	Version	Estimated Size	Installs Services	Uses Services	Installs Drivers	Processes	Date Installed
HP SoftPaq Download Manager	3.4.11.0	32,416					Jun 23, 2014
HP Software Setup	8.7.4	4,792					Jun 23, 2014
WmiPrvSE	Unknown	484				WmiPrvSE, wmioprse.exe	Nov 22, 2014
HP Documentation	1.1.0.0	212,451					Mar 21, 2015
Skype™ 5.8	5.8.156	38,960	Yes (1)				Apr 16, 2015
VMware USB Arbitration Service	e.x.p build-2716277	880				vmware-usbarbitrator64.exe	May 5, 2015
Intel(R) Update Manager	1.6.3.70	71,394				bootstrap.exe, ismagent.exe	May 6, 2015
Intel(R) WiDi	4.2.19.0	172,172					May 6, 2015
Intel(R) Smart Connect Technology	4.2.41.2499	46,570					May 6, 2015
Intel(R) Management and Security Status	11.0.0.1153	1,150				privacyconclnt.exe	Jun 24, 2015
Trend Micro Security Agent	5.7.1527	86,922	Yes (4)		Yes (3)	tmlisten.exe, tmccsf.exe, logwriter.exe, nrtscan.exe, tmopchromemsghost32.exe, pccontmon.exe, svcgenerichost.exe, pcntupd.exe, upgrade.exe, tmcpmadapter.exe, patchagent.exe, hostedagent.exe	Jul 28, 2015
Microsoft Visual C++ 2008 Redistributable - x64 9.0.21022	9.0.21022	1,864					Jul 28, 2015
Microsoft Visual C++ 2008 Redistributable - x86 9.0.21022	9.0.21022	2,244					Jul 28, 2015
WinMerge 2.14.0	2.14.0	4,032				winnergeu.exe	Jul 28, 2015
HP PageLift	1.0.13.1	6,264					Aug 5, 2015
Microsoft Mouse and Keyboard Center	2.5.166.0	40,516				ipoint.exe, itype.exe	Aug 6, 2015
HP ESU for Microsoft Windows 7	2.6.1	75,258					Sep 23, 2015
CyberLink PowerDVD 12	12.0.2.3720	133,910					Oct 17, 2015
Intel(R) Wireless Bluetooth(R)(patch version 17.1.1434.2)	17.1.1407.0480	59,288				bleservicesctrl.exe	Oct 17, 2015
OEM Application Profile	1.00.0000	1,208					Oct 17, 2015

Showing 1 - 20 of 202

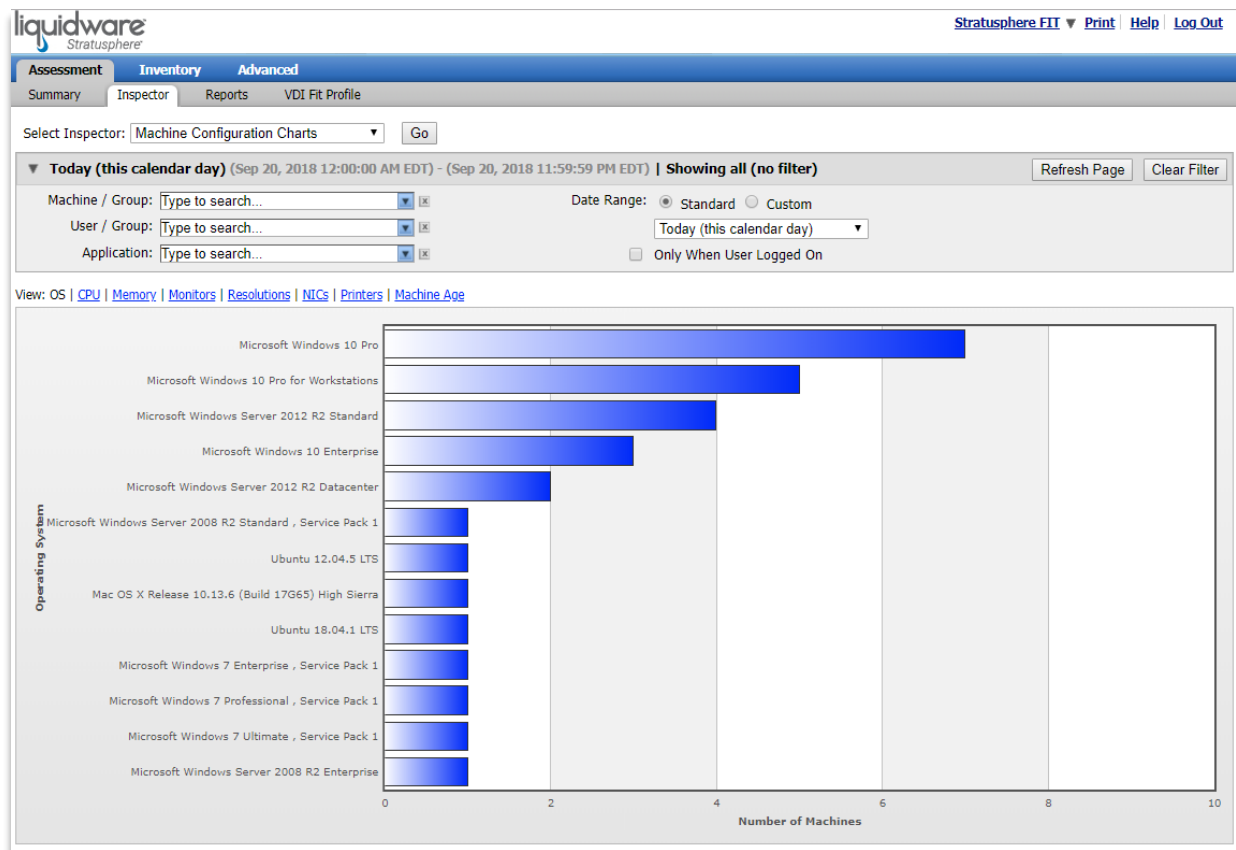
Page 1 of 11 < Prev Next >

## Assessing Desktop Configuration & Application Inventory

Once you have completed the data gathering period of your assessment, you are ready to begin generating reports and analyzing the environment. By analyzing desktop configuration and application inventory data, you will get a clear view of the various device configurations you have, the applications installed in your environment, and who uses those applications. From this data, you can determine what portion of the population has configurations that will easily fit into VDI, which ones might have to change, and what applications might be a target for application virtualization as well. This section provides you information on the key Inspector views and reports from the Report Library that provide you all the details on desktop, user, and application inventory and configuration.

### Desktop Configuration Data

To begin examining desktop configuration data, navigate to **Assessment > Inspector**. Select the inspector view **Machine Configuration Charts** in the drop-down, and then click the **Go** button to generate the charts for your assessment date range. Examine the configuration data gathered during the assessment, and the distribution of desktops in each category. Note that you can filter data by groups using filters at the top of the page.

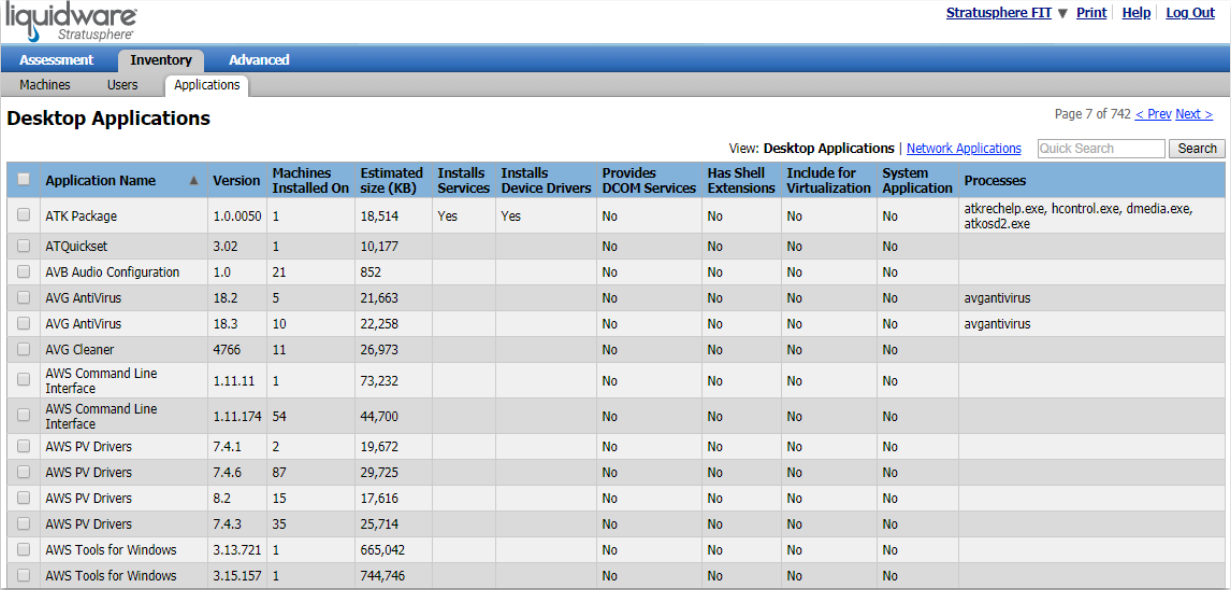


For additional insight, run some of the standard FIT reports in the Stratusphere Report Library. Go to **Assessment > Reports** and filter the reports for the assessment time period.



## Application Inventory Data

To view inventory information about all the applications on user desktops, go to **Inventory > Applications**. You can search for specific applications by application name or process name.


Stratusphere FIT [Print](#) [Help](#) [Log Out](#)

Assessment **Inventory** Advanced

Machines Users **Applications**

**Desktop Applications**
Page 7 of 742 [< Prev](#) [Next >](#)

View: [Desktop Applications](#) | [Network Applications](#)

<input type="checkbox"/>	Application Name	Version	Machines Installed On	Estimated size (KB)	Installs Services	Installs Device Drivers	Provides DCOM Services	Has Shell Extensions	Include for Virtualization	System Application	Processes
<input type="checkbox"/>	ATK Package	1.0.0050	1	18,514	Yes	Yes	No	No	No	No	atkrechelp.exe, hcontrol.exe, dmedia.exe, atkosd2.exe
<input type="checkbox"/>	ATQuickset	3.02	1	10,177			No	No	No	No	
<input type="checkbox"/>	AVB Audio Configuration	1.0	21	852			No	No	No	No	
<input type="checkbox"/>	AVG AntiVirus	18.2	5	21,663			No	No	No	No	avgantivirus
<input type="checkbox"/>	AVG AntiVirus	18.3	10	22,258			No	No	No	No	avgantivirus
<input type="checkbox"/>	AVG Cleaner	4766	11	26,973			No	No	No	No	
<input type="checkbox"/>	AWS Command Line Interface	1.11.11	1	73,232			No	No	No	No	
<input type="checkbox"/>	AWS Command Line Interface	1.11.174	54	44,700			No	No	No	No	
<input type="checkbox"/>	AWS PV Drivers	7.4.1	2	19,672			No	No	No	No	
<input type="checkbox"/>	AWS PV Drivers	7.4.6	87	29,725			No	No	No	No	
<input type="checkbox"/>	AWS PV Drivers	8.2	15	17,616			No	No	No	No	
<input type="checkbox"/>	AWS PV Drivers	7.4.3	35	25,714			No	No	No	No	
<input type="checkbox"/>	AWS Tools for Windows	3.13.721	1	665,042			No	No	No	No	
<input type="checkbox"/>	AWS Tools for Windows	3.15.157	1	744,746			No	No	No	No	

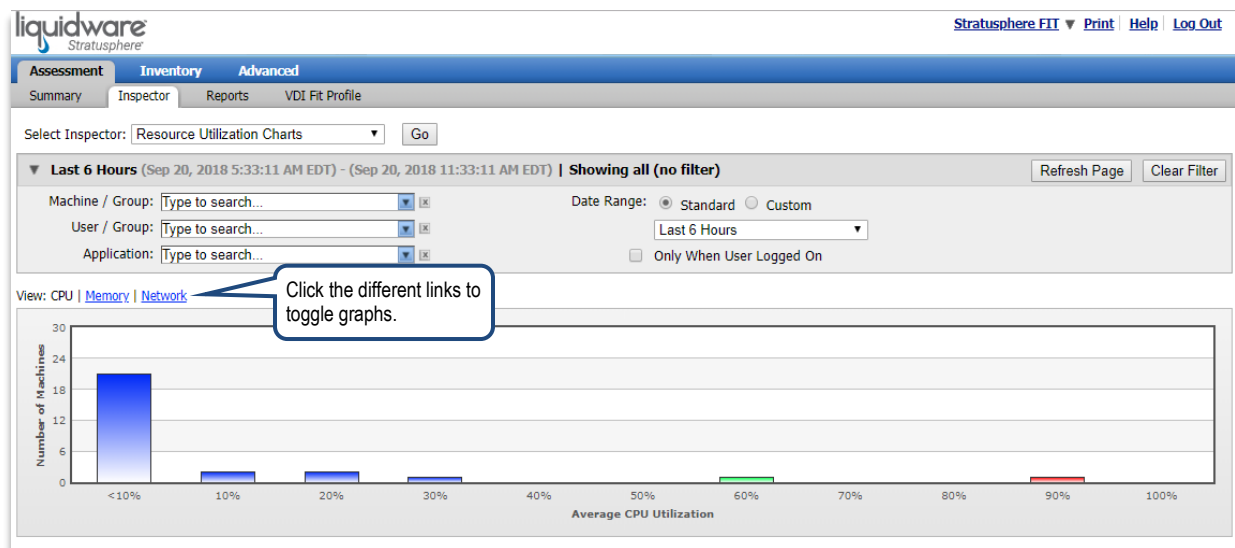
To print application inventory reports, go to **Assessment > Reports** and run the FIT application reports for the assessment time period.

## Assessing Resource Utilization by Desktop, User, and Application

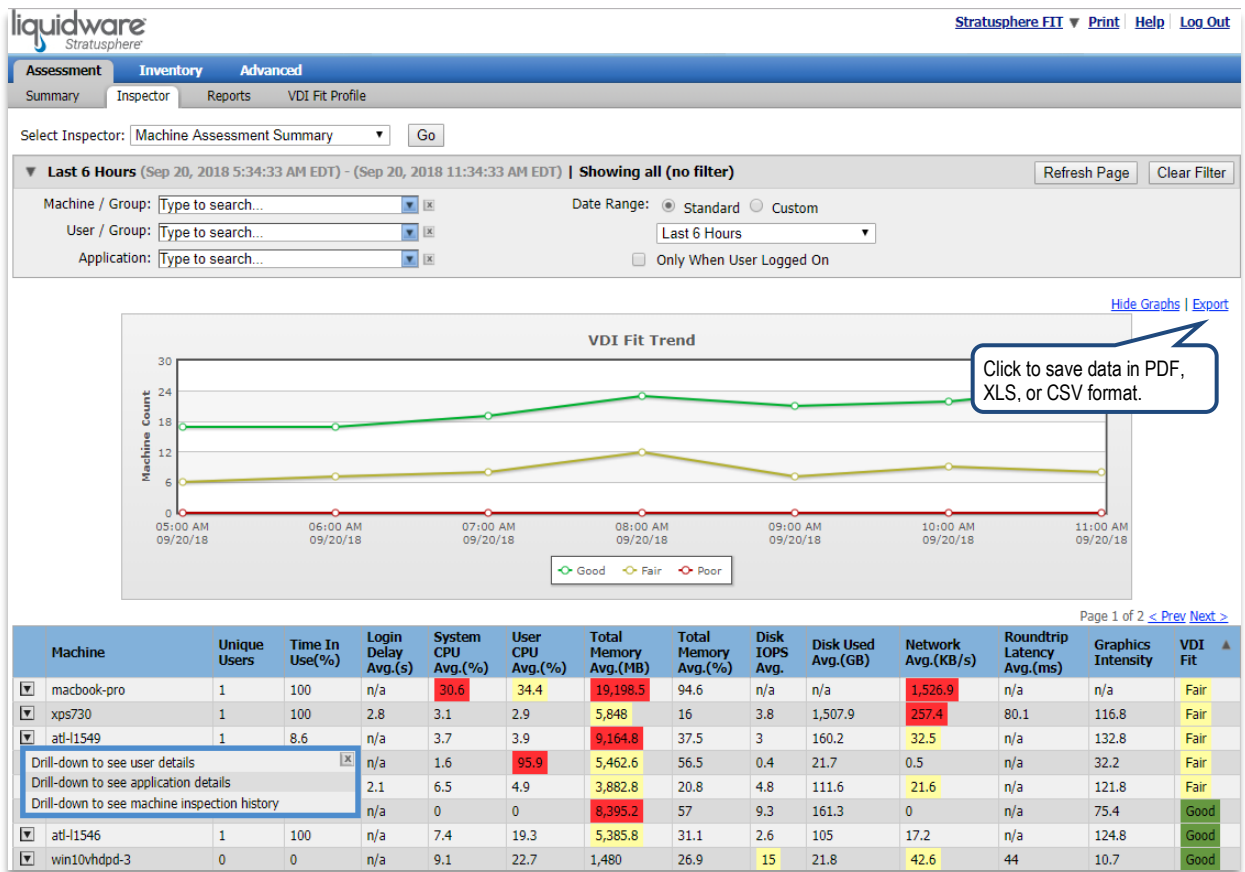
During an assessment, Stratusphere gathers extensive information on the resource utilization across desktops which can be viewed and analyzed by desktop, by user, or by application. This information is critical to understanding what desktops, users, and applications can be easily virtualized and which ones might not be ideal for virtualization due to extremely high resource requirements. This data is also critical in developing accurate capacity planning for a target VDI environment. This section covers the Inspector views and the Reports that you can use to review resource utilization data.

### Desktop Resource Utilization

To examine desktop resource utilization, navigate to **Assessment > Inspector** and select the **Resource Utilization Charts** view from the drop-down. Select the assessment data range, and then click the **Go** button. Examine the utilization distributions gathered during the assessment period using the filters to zero in on specific groups or times. You can toggle between CPU, memory, and network resource utilization graphs.



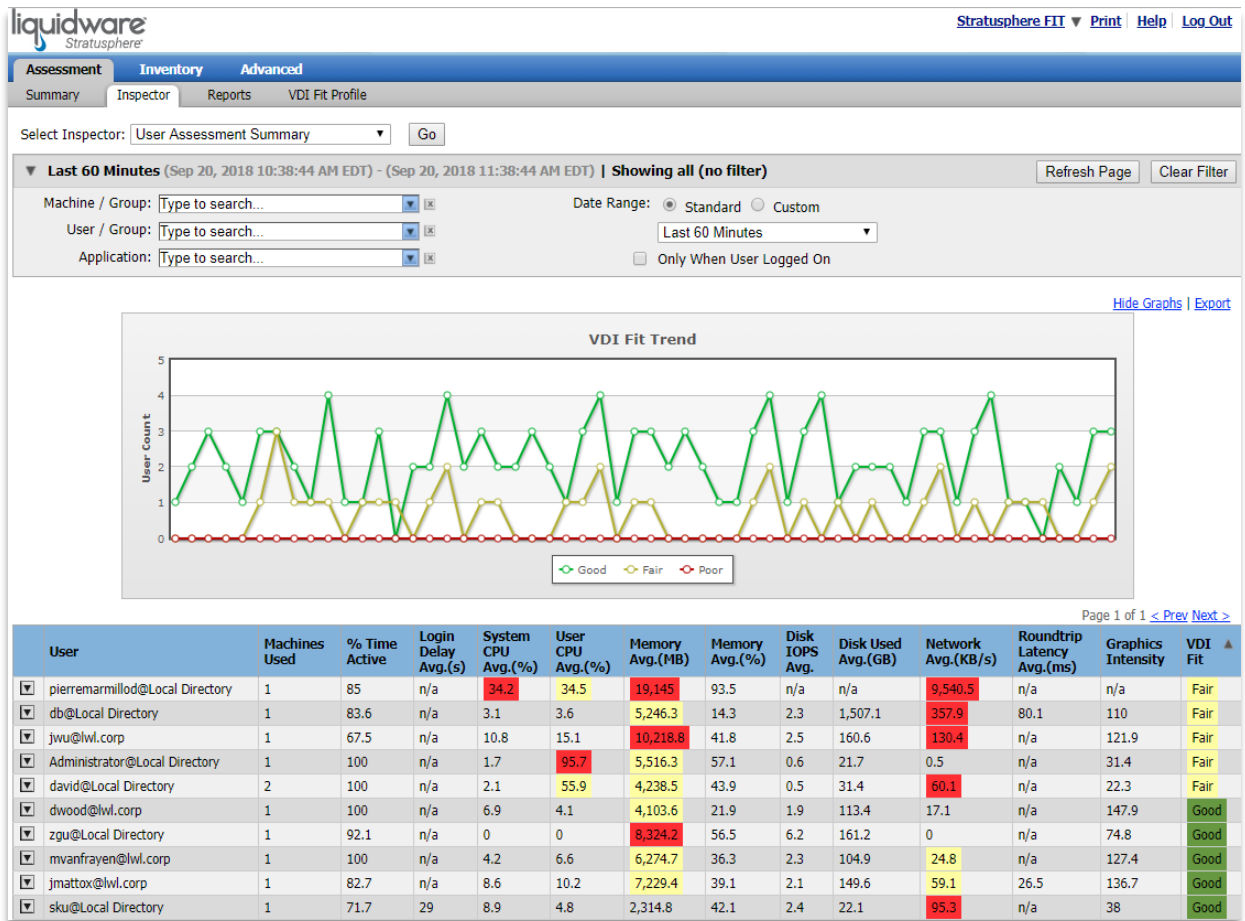
For more specific information on each device, select the **Machine Assessment Summary** view from the drop-down list and click **Go** to generate the new view. This view shows the summary of utilization data for each machine. You can export the data, or you can drill-down to see more granular details for individual machines. Note that machines with the highest resource utilization are auto sorted to the top.



The standard FIT machine reports in the Stratusphere Report Library provide additional information on resource utilization. Go to **Assessment > Reports** and filter the reports for the assessment time period.

## User Resource Utilization

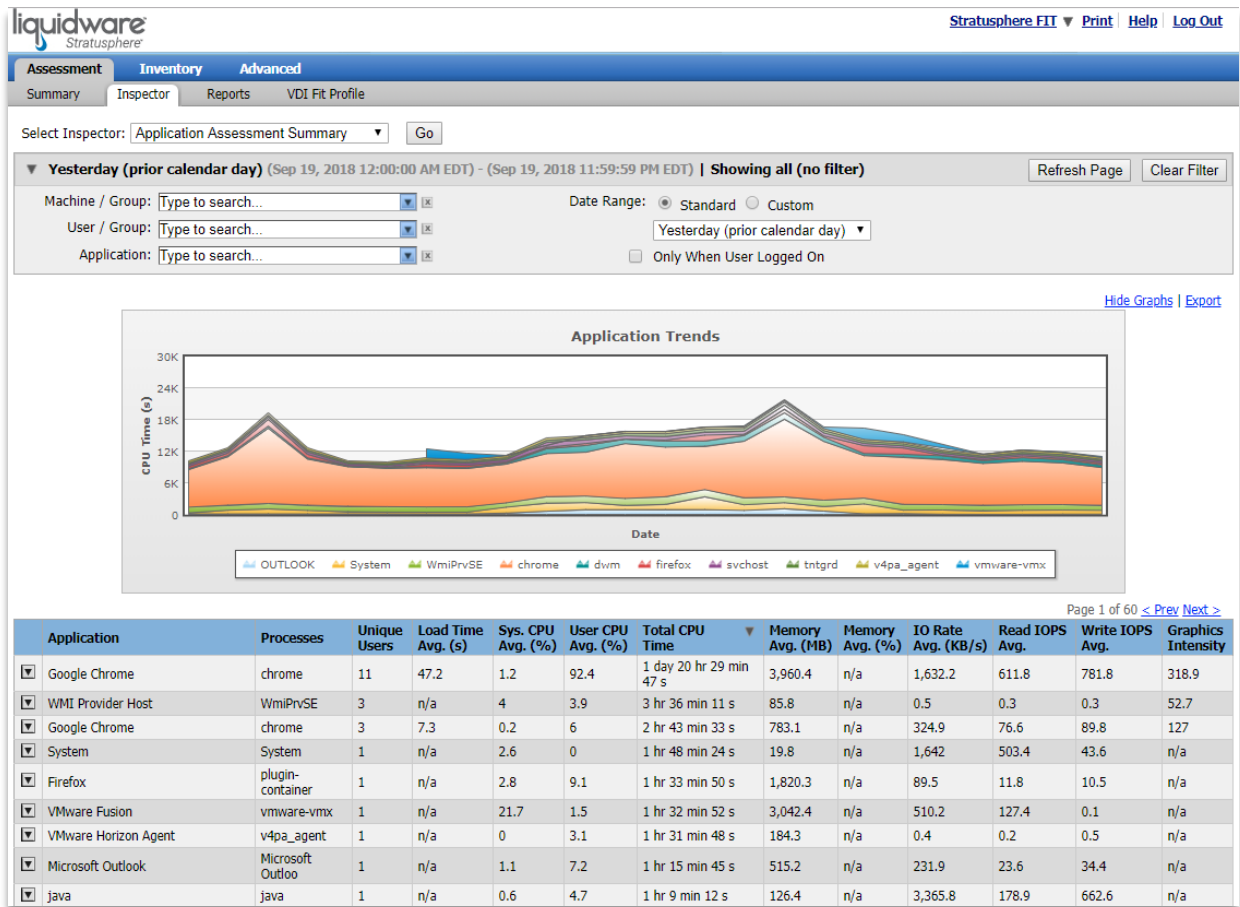
To examine resource utilization by user, navigate to **Assessment > Inspector** and select the **User Assessment Summary** view from the drop-down. Then click the **Go** button. This view shows the summary of utilization data for each user. You can export the data, or you can drill-down to see more granular details for individual users. Note that users with the highest resource utilization are auto sorted to the top.



For more user information, go to **Assessment > Reports** and run the FIT user reports for the assessment time period. As you will see, there are standard reports on both groups of users and individual users. Reports on groups of users are designed to leverage defined user groups which are recommended for production environments.

## Application Resource Utilization

To examine resource utilization by application, navigate to **Assessment > Inspector** and select the **Application Assessment Summary** view from the drop-down. Then click the **Go** button. This view shows the summary of utilization data for each application. You can export the data or drill-down to see more granular details for individual applications. Note that applications with the highest resource utilization are auto sorted to the top.



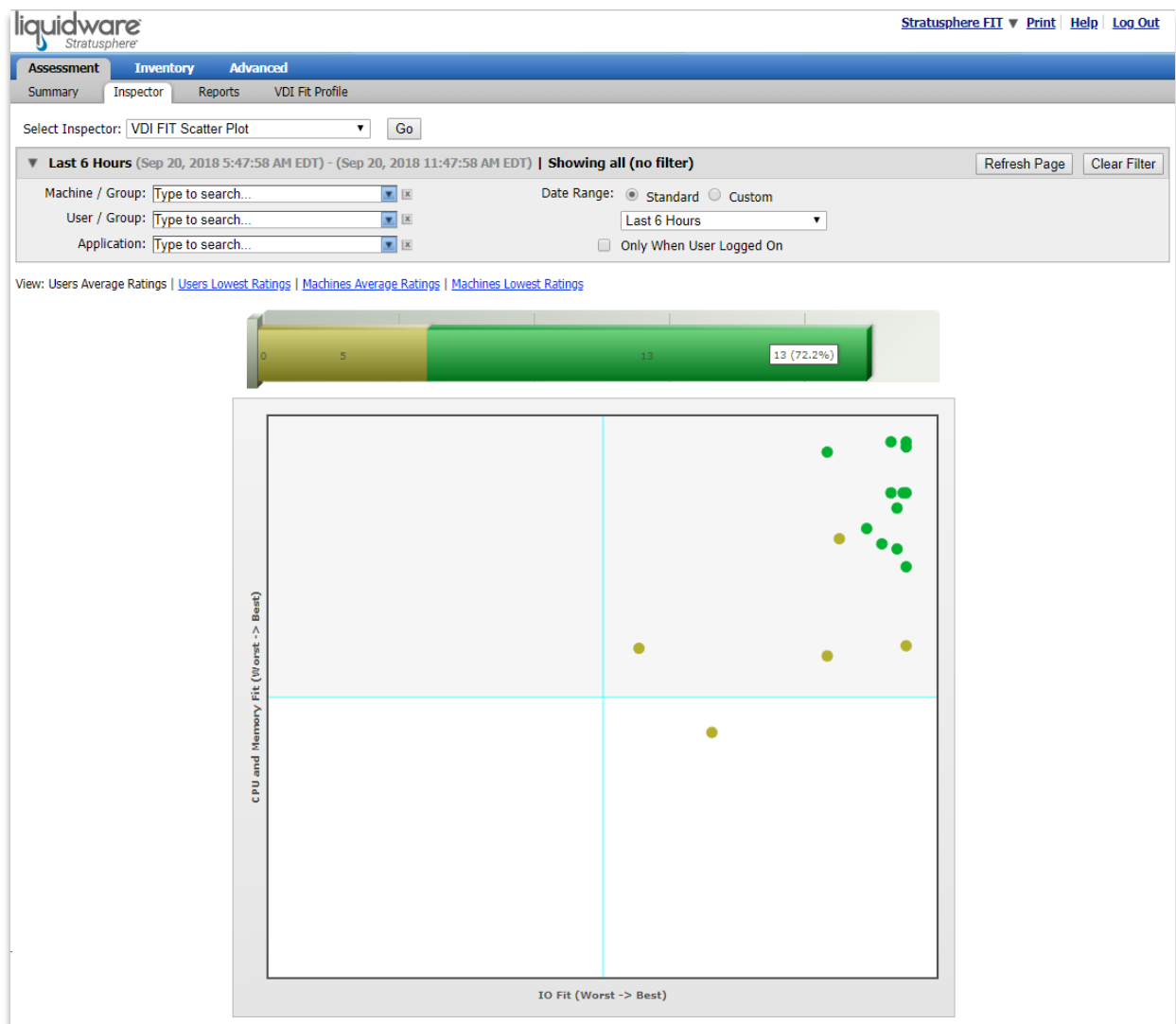
For more in-depth reports on application resource usage, go to **Assessment > Reports** and run some of the FIT application reports for the assessment time period.

## Preparing the Summary Analysis and Creating Recommendations

The final step in using Stratusphere for VDI assessment is to generate the summary analysis and findings reports. The VDI FIT categorization (Good/Fair/Poor fit for VDI) used in many of the reports is based on the VDI FIT Profile settings discussed previously while learning the basics of Stratusphere. As part of your assessment analysis, you may choose to adjust and recalculate VDI FIT scores according to your target VDI environment. In this section, we cover the key summary reports you can generate and use to construct your final assessment deliverables.

### VDI FIT Analysis

To examine the distribution of VDI FIT scores (Good/Fair/Poor) for desktops or users, go to **Assessment > Inspector** and select the **VDI Fit Scatter Plot** view from the drop-down list. Then click the **Go** button. You can choose to display the plot based on machine ratings or based on user ratings. The bar at top shows the distribution, and the scatter plot shows how the values are clustered on two dimensions (CPU/Memory and Disk/Network). You can toggle between displaying average fitness ratings or the lowest fitness ratings which reflect peak periods of resource consumption.



## Application Virtualization Candidates

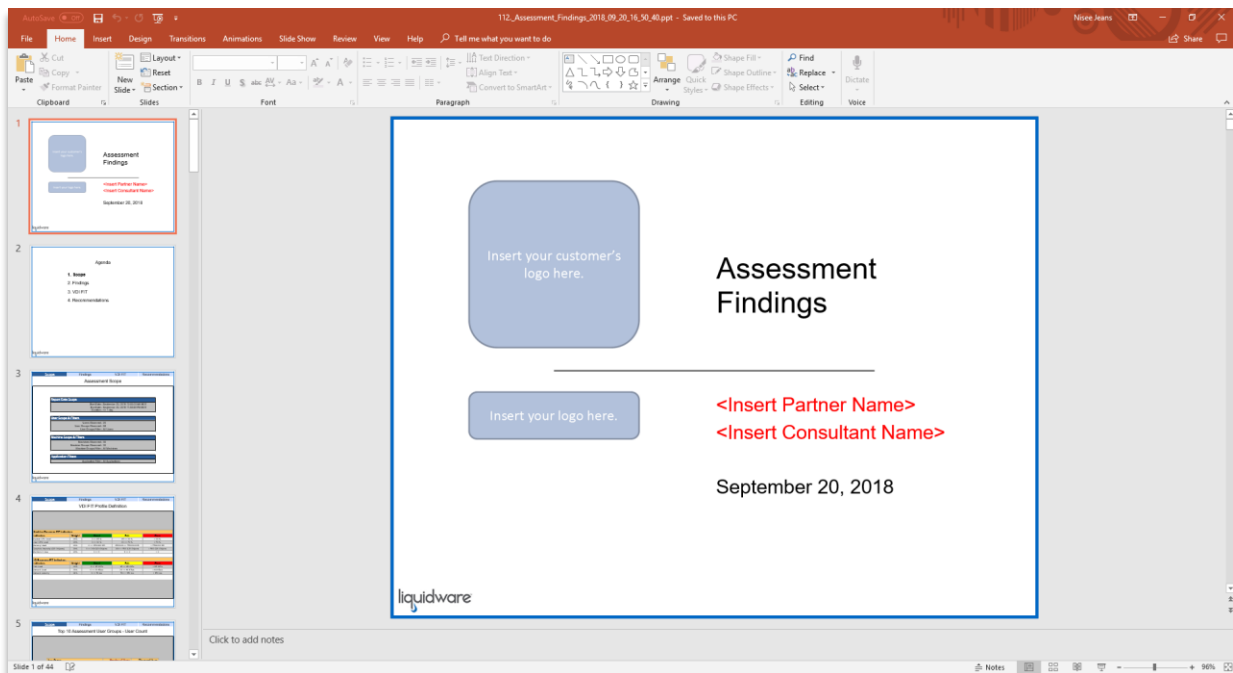
Based on the application inventory and usage data gathered, Stratusphere can help you categorize applications and identify those which would most benefit from virtualization using technologies such as VMware ThinApp. You may choose to virtualize applications as a first step towards virtualizing desktops.

Go to **Assessment > Reports** and run the FIT Assessment reports on Application Virtualization Candidates for the assessment time period.

## Assessment Findings Summary

The Assessment Findings report is a single summary produced as a PDF or a 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 assessment activity, the findings and analysis, and placeholders for your final recommendations.

To generate the report, login to Stratusphere Fit and go to the **Assessment > Reports** tab. From the Report Library, choose the **FIT Assessment Reports (Pack 1)** category. Select the “112. Assessment Findings” report and click the **Run** button. Then specify the start date and end date of your assessment for the report along with the format you prefer. Note that this report may take 5 minutes or more to run, depending on the length of your assessment and the amount of data gathered. After the report has been generated you can download it to view it. The result file will also be stored in the Reports archive where you can access and download the PowerPoint report later.



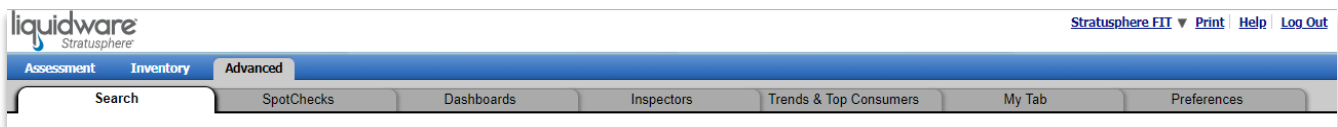
For additional assessment reports, run some of the standard FIT reports in the Stratusphere Report Library. Go to **Assessment > Reports** and filter the reports for your assessment time period.

## Using the Stratusphere UX Advanced Mode

In Stratusphere UX the Advanced Mode provide faster and more flexible methods to view and analyze your data in detail. As part of the Stratusphere FIT installation, we are including a sneak peek of this technology. 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 current Advanced Mode focuses on providing Administrators an optimized way of monitoring the user's experience and diagnosing problems in the infrastructure through our Stratusphere UX product. However, many of these new Advanced Inspectors, like the Machine and User Views, can also help you with your Stratusphere FIT Assessment analysis. Future plans include extending the Advanced Inspector technology to directly incorporate all the Stratusphere FIT Inspectors.

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



The Advanced Mode consist of several different tabs running across the top bar. These tabs correspond to different approaches that can be used to inspect the metric 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.

The screenshot shows the Stratusphere FIT search results page. The search bar at the top contains the text "david". The date filter is set to "Today and Yesterday". The search status is "Searching". The top right corner shows "73 queries" left to run. The search results are displayed in a list format, showing the number of rows found for each search category. The results are as follows:

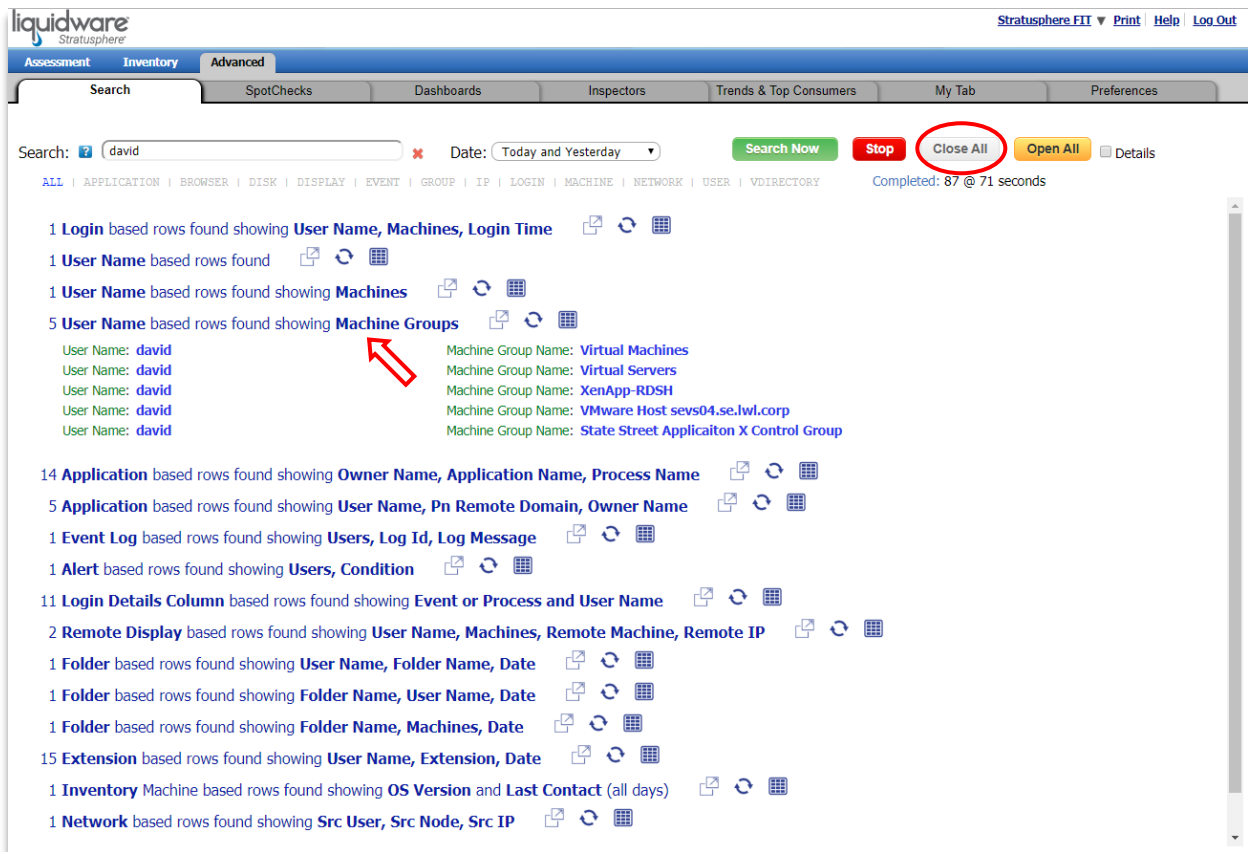
- 1 Login based rows found showing User Name, Machines, Login Time
  - Login Name: david
  - Machine Name: sevws12-01.se.lwl.corp
  - Login Time: 2018-10-18 12:42:29
- 1 User Name based rows found
  - User Name: david
- 1 User Name based rows found showing Machines
  - User Name: david
  - Machine Name: sevws12-01.se.lwl.corp
- 5 User Name based rows found showing Machine Groups
  - User Name: david
  - User Name: david
  - User Name: david
  - User Name: david
  - User Name: david
  - Machine Group Name: Virtual Machines
  - Machine Group Name: Virtual Servers
  - Machine Group Name: XenApp-RDSH
  - Machine Group Name: VMware Host sevws04.se.lwl.corp
  - Machine Group Name: State Street Applcaiton X Control Group

At the bottom of the screen, there are five search progress indicators showing the status of various queries:

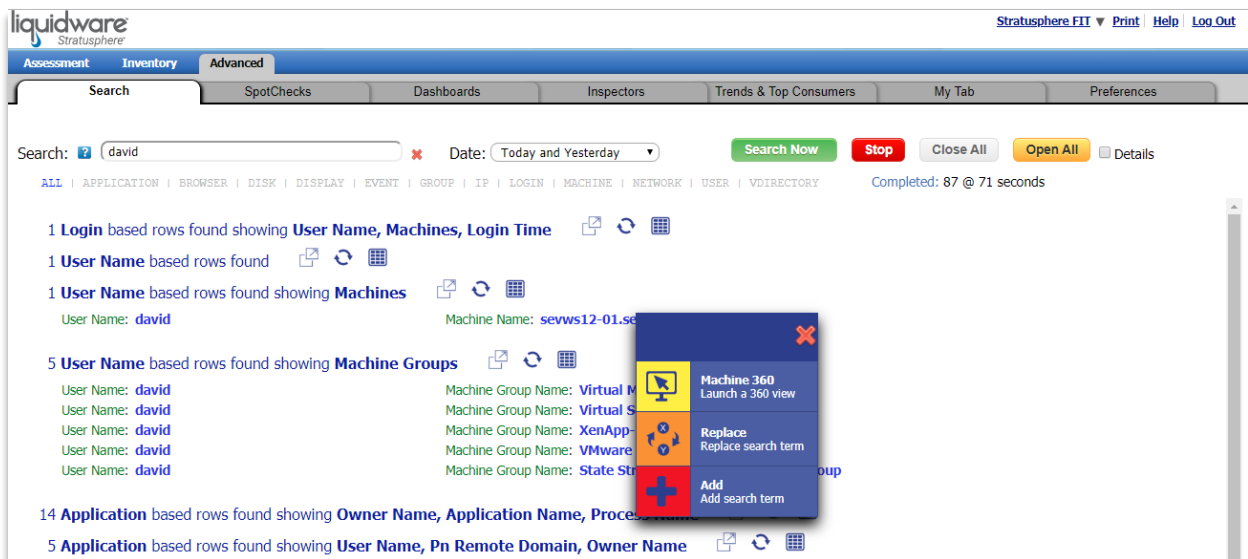
- #13, Searching Application Inspector by OWNER NAME : 01
- #14, Searching Application Inspector by APPLICATION NAME : 02
- #15, Searching Application Inspector by APPLICATION NAME : 02
- #16, Searching Application Inspector by APPLICATION NAME : 03
- #18, Searching Application Inspector by PROCESS NAME : 05
- #19, Searching Application Inspector by PROCESS NAME : 01

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 Pop out Inspector icon to the right of the report name to jump right to that inspector.

liquidware

Stratusphere

360 Dashboard for Machine: **sevws12-01.se.lwl.corp**

35 returned

Completed: 37 @ 43 seconds

✕

Refresh

Stop

Close All

Open All

Date: Today and Yesterday

[ALL](#) | [APPLICATION](#) | [CONSUMPTION](#) | [EVENTS](#) | [EXPERIENCE](#) | [INVENTORY](#) | [NETWORK](#) | [TOP 25](#) | [TREND](#) | [VOLUME](#)

Domain Overview for Machine (following date)

Machine Name	Login Domain	O/S Version	CID Version	UX Score	FIT Score	App Load Time	App Not Resp (ANR)	Login Delay	Login Count	Logout Count	Is Virtual	CPU Cores Allocated	Disk Count	NIC Count	Workload Ranking	Users on Machine	Machine Count	Date Count	CID Record Avg Minute
sevws12-01.se.lwl.corp	@se	Windows : 6.3.9600 :	cid64-6.1.0-1	B+	A+	24.9 sec	0	12 sec	1	1	1	2	1	1	1	1	1	1	1,440 m
sevws12-01.se.lwl.corp	@NO_LOGIN_USER	Windows : 6.3.9600 :	cid64-6.1.0-1	B+	A+	0.0 sec	0	0 sec	0	0	1	2	1	1	2	0	1	1	606 m

Login Details by Machine & Login Time (following date)

Machine Name	Login Name	Login Time	Login Delay	Auth Attempt	Network Providers	Group Policy Computer	Group Policy User	Group Policy Scripts	User Profile Service	Restore Network	Loading Shell	Abnormal Events	Record Count
sevws12-01.se.lwl.corp	david	2018-10-18 12:42:29	12.0 sec	0.603 sec	1.405 sec	0.000 sec	1.311 sec	0.019 sec	1.305 sec	0.000 sec	24.902 sec	2	216

Desktop Allocation Details (following date)

Machine Name	UX Score	FIT Score	CPU Cores Allocated	CPU MHz Allocated	Memory Allocated MB	Page Allocated MB	Disk Allocated GB	Workload Ranking	Users on Machine	Machine Count	Date Count	CID Records Avg Minutes	CID Records Avg Hours	CID Records Total Hours	CID % of Res	CID Record Count
sevws12-01.se.lwl.corp	B+	A+	2	5,000 MHz	8,192 MB	1,536 MB	63.7 GB	1	1	1	2	1,023 mins	17.04 hrs	34.11 hrs	99.80 %	2

Desktop Consumption Units (following date)

Machine Name	FIT Score	CPU Used MHz	Memory Used MB	Page Used MB	Cache Memory Used MB	Disk Used GB	Disk Read IOPS	Disk Write IOPS	Disk Read KBs	Disk Write KBs	Network Recv KBs	Network Sent KBs	Workload Ranking	Users on Machine	Machine Count	Date Count	CID Records Avg Minutes	CID Records Avg Hours	CID Records Total Hours
sevws12-01.se.lwl.corp	A+	159 MHz	1,426 MB	1,232 MB	2,409 MB	41.2 GB	0.0 iops	0.1 iops	3.6 KBs	22.1 KBs	0.8 KBs	0.8 KBs	1	1	1	2	1,023 mins	17.04 hrs	34.11 hrs

## Advanced Mode SpotChecks

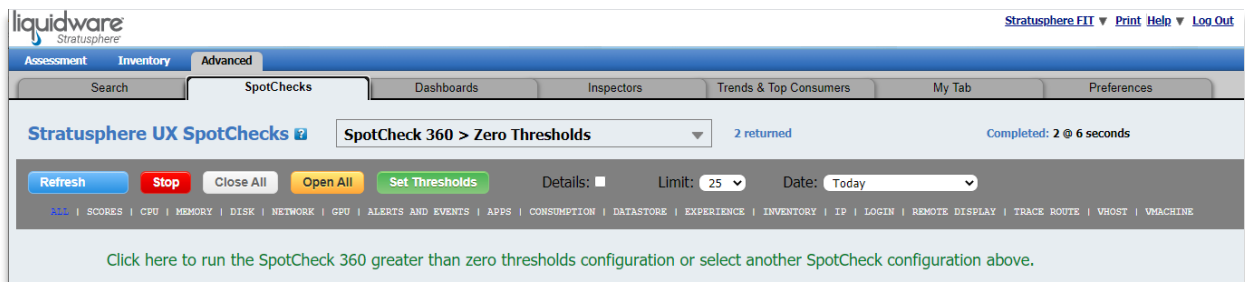
A SpotCheck inspection is a point-in-time analysis that focuses on key user-experience metrics. The methodology leverages known levels of acceptable performance and baselines to identify infrastructure and platform constraints that can contribute to a poor user-experience. A SpotCheck inspection takes 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 include 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.

**SpotCheck Configuration Thresholds**

Run This Load/Save Group Filter View Action Search:  Apply

#	Machine/User	Metric	Operator	Value	#	Enabled	Description
#1	Machine/User	UX Score	<=	3	#1	<input type="checkbox"/>	Lowest UX Scores by Machine & User Name
#2	Machine/User	UX Compute (y)	<=	3	#2	<input type="checkbox"/>	Lowest UX Scores (Compute) by Machine & User Name
#3	Machine/User	UX IO (x)	<=	3	#3	<input type="checkbox"/>	Lowest UX Scores (IO) by Machine & User Name
#4	Machine/User	FIT Score	<=	3	#4	<input type="checkbox"/>	Lowest FIT Scores by Machine & User Name
#5	Machine/User	FIT Compute (y)	<=	3	#5	<input type="checkbox"/>	Lowest FIT Scores (Compute) by Machine & User Name
#6	Machine/User	FIT IO (x)	<=	3	#6	<input type="checkbox"/>	Lowest FIT Scores (IO) by Machine & User Name
#7	Machine/User	CPU Queue	>	0	#7	<input type="checkbox"/>	Top CPU Used Queue by Machine & User Name
#8	Machine/User	CPU Used MHz	>	0 MHz	#8	<input type="checkbox"/>	Top CPU Used MHz by Machine & User Name
#9	Machine/User	CPU Used %	>	0 %	#9	<input type="checkbox"/>	Top CPU Used % by Machine & User Name
#10	Machine/User	Memory Used MB	>	0 MB	#10	<input type="checkbox"/>	Top Memory Used MB by Machine & User Name
#11	Machine/User	Memory Used %	>	0 %	#11	<input type="checkbox"/>	Top Memory Used % by Machine & User Name
#12	Machine/User	Page Used MB	>	0 MB	#12	<input type="checkbox"/>	Top Page Used MB by Machine & User Name
#13	Machine/User	Pagefile Used %	>	0 %	#13	<input type="checkbox"/>	Top Page Used % by Machine & User Name
#14	Machine/User	Hard Page Faults	>	0	#14	<input type="checkbox"/>	Top Hard Page Faults by Machine & User Name
#15	Machine/User	Soft Page Faults	>	0	#15	<input type="checkbox"/>	Top Soft Page Faults by Machine & User Name

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.

**Stratusphere UX SpotChecks**

Click to run - SpotCheck 360 Medium Thresholds

Refresh Stop Close All Open All Set Thresholds

Details: ☐ Limit: 25 Date: Today

ALL | **SCORES** | CPU | MEMORY | DISK | NETWORK | GPU | ALERTS AND EVENTS | RPS | CONSUMPTION | DATASTORE | EXPERIENCE | IP | LOGIN | NOTE DISPLAY | TRACE ROUTE | VHOST | VMACHINE

#1. Lowest 1 of 25 UX Scores (IO) by Machine & User Name (following date) UX Score < 2.75

Machine Name	User Name	UX Score
jerrys-air.lwl.corp	jerrywu	B+
lwltbxmad01.lwldemocenter.local	jason	B+
ati-l1552.lwl.corp	dwood	B+
ati-l1546.lwl.corp	mvanfrayen	B+
sh-prou68-1.spt.lwl.corp	shajek	B+
zinfandel	kevincooke	B+
swan-gateway	sung han	B+

#2. Lowest 8 of 25 UX Scores (Compute) by Machine & User Name (following date) UX Compute (y) < 2.75

Machine Name	User Name	UX Compute (y)
jerrys-air.lwl.corp	jerrywu	1.85
lwltbxmad01.lwldemocenter.local	jason	1.95
ati-l1552.lwl.corp	dwood	2.24
ati-l1546.lwl.corp	mvanfrayen	2.34
sh-prou68-1.spt.lwl.corp	shajek	2.42
swan-gateway	sung han	2.60
pdkhare-lu14-1417.atl.lwl.corp	dkhare	2.65
mcvf-pc	mcvf	2.69

#3. Lowest 1 of 25 UX Scores (IO) by Machine & User Name (following date) UX IO (x) < 2.75

Click on the **Close All** button to see a full list of each report in the category you have selected while hiding the data.

Stratusphere UX SpotChecks - Click to run - SpotCheck 360 Medium Thresholds 6 returned Completed: 6 @ 7 seconds

Refresh Stop **Close All** Open All Set Thresholds Details: Limit: 25 Date: Today

ALL | SCORES | CPU | MEMORY | DISK | NETWORK | GPU | ALERTS AND EVENTS | APPS | CONSUMPTION | DATASTORE | EXPERIENCE | IP | LOGIN | REMOTE DISPLAY | TRACE ROUTE | VHOST | VMACHINE

- #1. Lowest 7 of 25 UX Scores by Machine & User Name (following date) UX Score < 2.75
- #2. Lowest 8 of 25 UX Scores (Compute) by Machine & User Name (following date) UX Compute (y) < 2.75
- #3. Lowest 1 of 25 UX Scores (IO) by Machine & User Name (following date) UX IO (x) < 2.75
- #4. Lowest 4 of 25 FIT Scores by Machine & User Name (following date) FIT Score < 2.75
- #5. Lowest 5 of 25 FIT Scores (Compute) by Machine & User Name (following date) FIT Compute (y) < 2.75
- #6. Lowest 2 of 25 FIT Scores (IO) by Machine & User Name (following date) FIT IO (x) < 2.75

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.

Stratusphere UX SpotChecks - Click to run - SpotCheck 360 Medium Thresholds 6 returned Completed: 4 seconds

Refresh Stop Close All Open All Set Thresholds Details: Limit: 25 Date: Today

ALL | SCORES | CPU | MEMORY | DISK | NETWORK | GPU | ALERTS AND EVENTS | APPS | CONSUMPTION | DATASTORE | EXPERIENCE | IP | LOGIN | REMOTE DISPLAY | TRACE ROUTE | VHOST | VMACHINE

- #1. Lowest 7 of 25 UX Scores by Machine & User Name (following date) UX Score < 2.75
- #2. Lowest 8 of 25 UX Scores (Compute) by Machine & User Name (following date) UX Compute (y) < 2.75
- #3. Lowest 1 of 25 UX Scores (IO) by Machine & User Name (following date) UX IO (x) < 2.75
- #4. Lowest 4 of 25 FIT Scores by Machine & User Name (following date) FIT Score < 2.75

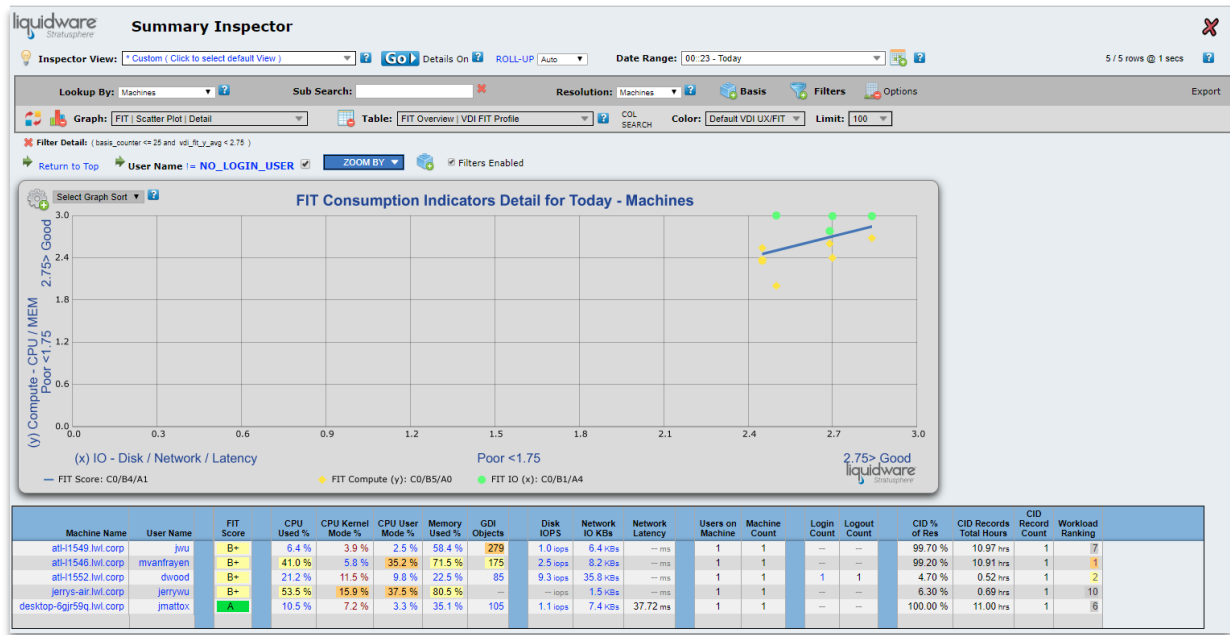
Machine Name	User Name	FIT Score	UX Compute (y)	UX IO (x)	CPU Used %	CPU Kernel Mode %	CPU User Mode %	Memory Used %	GDI Objects	Disk IOPS	Network IO KBs	Network Latency	CID Records Avg Minutes	CID Records Avg Hours	CID Records Total Hours	CID % of Res	CID Record Count
atl-11552.lwl.corp	dwood	B+	2.24	2.76	21.4 %	11.5 %	9.9 %	22.8 %	75	11.1 iops	42.3 KBs	0.00 ms	21 mins	0.35 hrs	0.35 hrs	3.20 %	1
atl-11549.lwl.corp	jwu	B+	2.90	3.00	6.4 %	3.9 %	2.5 %	58.4 %	279	1.0 iops	6.4 KBs	0.00 ms	648 mins	10.79 hrs	10.80 hrs	98.20 %	1
jerrys-air.lwl.corp	jerrywu	B+	1.85	3.00	53.5 %	15.9 %	37.5 %	80.5 %	0	0.0 iops	1.5 KBs	0.00 ms	41 mins	0.69 hrs	0.69 hrs	6.30 %	1
atl-11546.lwl.corp	mvanfrayen	B+	2.34	3.00	41.0 %	5.8 %	35.2 %	71.5 %	175	2.5 iops	8.2 KBs	0.00 ms	645 mins	10.73 hrs	10.74 hrs	97.70 %	1

- #5. Lowest 5 of 25 FIT Scores (Compute) by Machine & User Name (following date) FIT Compute (y) < 2.75

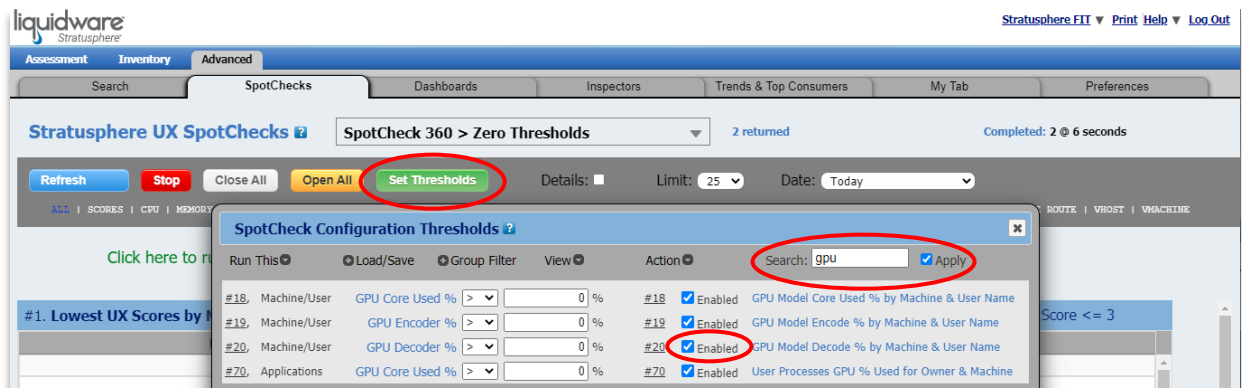
Machine Name	User Name	FIT Compute (y)
atl-11549.lwl.corp	jwu	2.00
atl-11546.lwl.corp	mvanfrayen	2.40
atl-11552.lwl.corp	dwood	2.51
jerrys-air.lwl.corp	jerrywu	2.60
desktop-6gr59q.lwl.corp	jmattox	2.68

- #6. Lowest 2 of 25 FIT Scores (IO) by Machine & User Name (following date) FIT IO (x) < 2.75

This is an example of a pop out inspector.



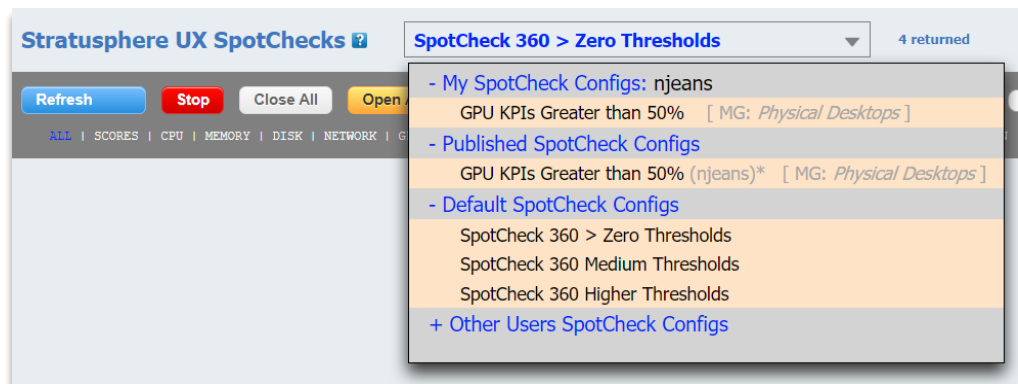
In addition to the 3 thresholds that are included with the SpotChecks, administrators can create their own thresholds and add them to the drop-down list. To create your own SpotCheck threshold:



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:

ID	Machine/User	Metric	Threshold	Status	Name
#18	Machine/User	GPU Core Used %	> 50 %	Enabled	GPU Model Core Used % by Machine & User Name
#19	Machine/User	GPU Encoder %	> 50 %	Enabled	GPU Model Encode % by Machine & User Name
#20	Machine/User	GPU Decoder %	> 50 %	Enabled	GPU Model Decode % by Machine & User Name
#70	Applications	GPU Core Used %	> 50 %	Enabled	User Processes GPU % Used for Owner & Machine

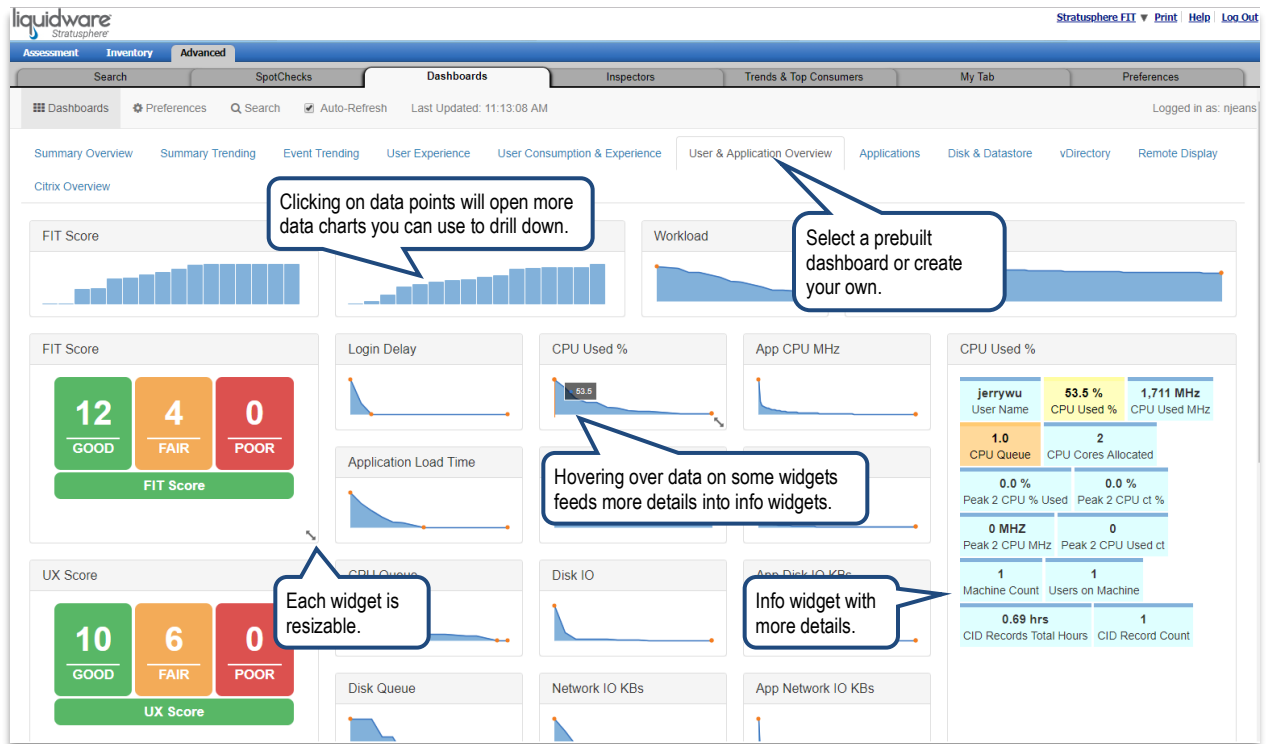
- Click **Load/Save**.
- Enter a **Menu Title**. For this example, we have “GPU KPIs Greater than 50%”. Enter a **Description** for future reference on why you created this SpotCheck and any comments on interpreting the results.
- Check **Enabled** to access this SpotCheck Configuration in the top menu.
- Click **Publish** if this SpotCheck Configuration should be seen in the main area of the top menu.
- Click **Public Readable** if others should be able to see this SpotCheck in the lower portion of the top menu.
- To create this new SpotCheck Configuration click **Save As**.
- 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 screenshot displays the Liquidware Stratusphere FIT Advanced Dashboards interface. The top navigation bar includes tabs for Search, SpotChecks, Dashboards, Inspectors, Trends & Top Consumers, My Tab, and Preferences. The Search tab is active, and the Search button is highlighted with a red circle. A callout bubble points to the Search button, stating: "Select the resolution to see more or less data." Another callout bubble points to the search results table, stating: "Easily search for Users, Machines, Applications, etc." The search panel on the left includes fields for User Name @ Domain, Machine Name, Machine ID, Machine Group Name, Machine Group ID, Datastore Name, Datastore ID, and Datastore Type. The main dashboard area shows various performance metrics and charts, including FIT Score, Login Delay, CPU Used %, App CPU MHz, App Memory MB, App Disk IO KBs, App Network IO KBs, UX Score, CPU Queue, Disk IO, Disk Queue, and Network IO KBs. The search results table at the bottom shows a list of users and their associated metrics.

End Date-Hour	User Name	UX Score	Login Delay	App Load Time	App Not Resp (ANR)	GPU Core Used %	CPU Used %	Memory Used %	Pagefile Used %	Disk Active %	Disk IOPS	Network Latency
2018-10-19 10:00:00	jerrywu	B+	0sec	0.0sec	0	0.0 %	51.3 %	80.0 %	80.0 %	0.0 %	0.0kops	0.00ms

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**.

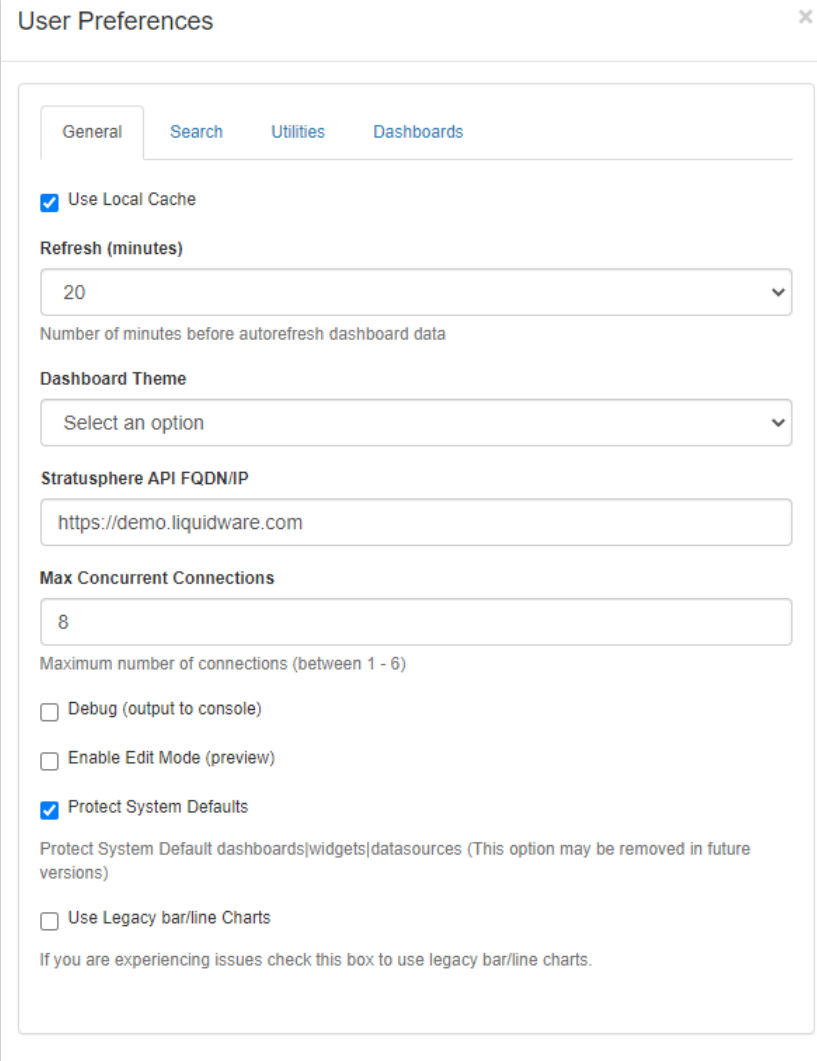
You may use as many of the search criteria, such as User Name, Machine Name or Datastore, as you like to further constrain your search. Selections are also available to set Date or Time ranges, Resolution, and result Limits. To reset the dashboard to the default search, click on the **Clear All** button 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 per browser by using the Preferences option at the top. Any changes you make to your preferences are automatically saved. There are tabs for the following:

- **General** – set general dashboard preferences
- **Search** – set search specific preferences
- **Utilities** – allows you to import a dashboard
- **Dashboards** – choose which dashboards to load from the available dashboards

On the General tab, check **Enable Edit Mode** to create your own dashboards.



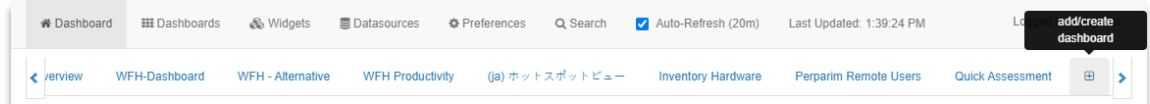
The screenshot shows a 'User Preferences' dialog box with a close button (X) in the top right corner. It features four tabs: 'General' (selected), 'Search', 'Utilities', and 'Dashboards'. Under the 'General' tab, there are several settings: a checked checkbox for 'Use Local Cache'; a 'Refresh (minutes)' dropdown menu set to '20' with a note 'Number of minutes before autorefresh dashboard data'; a 'Dashboard Theme' dropdown menu set to 'Select an option'; a text input field for 'Stratusphere API FQDN/IP' containing 'https://demo.liquidware.com'; a 'Max Concurrent Connections' input field set to '8' with a note 'Maximum number of connections (between 1 - 6)'; three unchecked checkboxes for 'Debug (output to console)', 'Enable Edit Mode (preview)', and 'Protect System Defaults' (which is checked in the image); a note 'Protect System Default dashboards|widgets|datasources (This option may be removed in future versions)'; and an unchecked checkbox for 'Use Legacy bar/line Charts' with a note 'If you are experiencing issues check this box to use legacy bar/line charts.'

Check **Use Legacy bar/line Charts** if you experience any issues with these type of graphs in the dashboard widgets. Alternatively, check to make sure your browser version is up-to-date.

## Creating a Dashboard

In order to create a new dashboard:

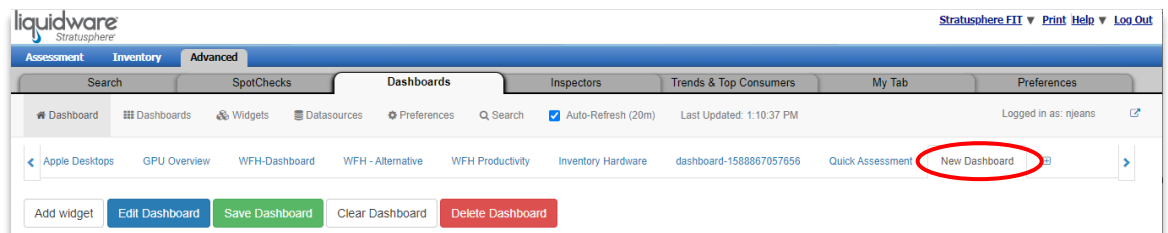
1. All loaded Dashboards will be listed at the top. Click on the right arrow as many times as needed to horizontally scroll through your entire list of loaded dashboards. Then click on the plus sign at the end of the Dashboard tabs to create a new tab.



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.

A screenshot of the 'Edit Dashboard' form. The form has a title bar 'Edit Dashboard' with 'Cancel' and 'Save' buttons. It contains several sections: 'Dashboard Name' with a text input field containing 'New Dashboard'; 'Description' with a large text area; 'Access Groups' with a list of 'Eligible Groups' (including (Apps) Oxygen, (dash) Default Dashboards, All Employees, Atlanta, dash\_admin, dash\_user, Domain Users, and .I.e.a.r.c) and a 'Selected' group containing 'Everyone'; a checkbox for 'Display in Tabs'; a 'Sort Order' input field with the value '100'; and an 'API String' input field. A note at the bottom explains the API String format.

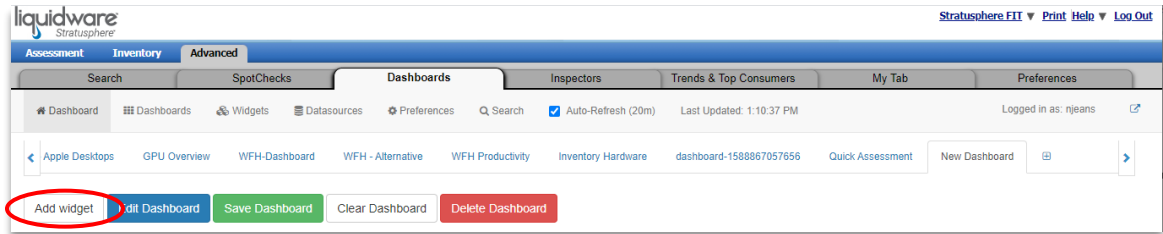
3. Go back to the Dashboards tab and see your new tab added to the existing Dashboards. Now you are ready to add a widget.



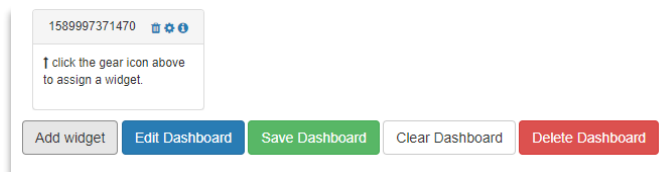
## Adding a Widget

The next step is to add widgets to your new dashboard. To add a widget:

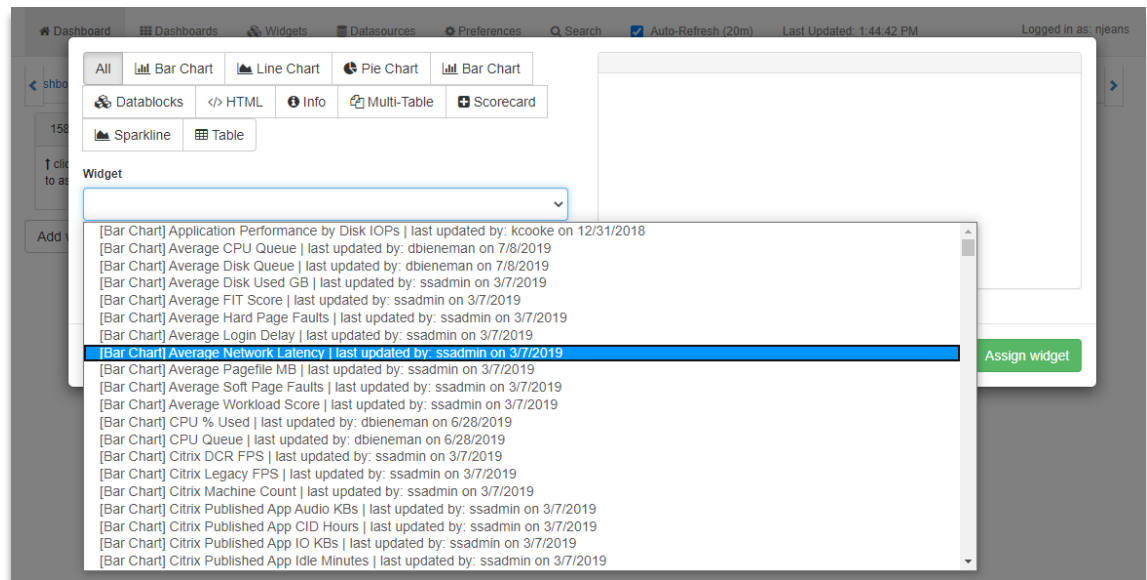
1. Click on the **Add widget** button under your dashboard.



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.



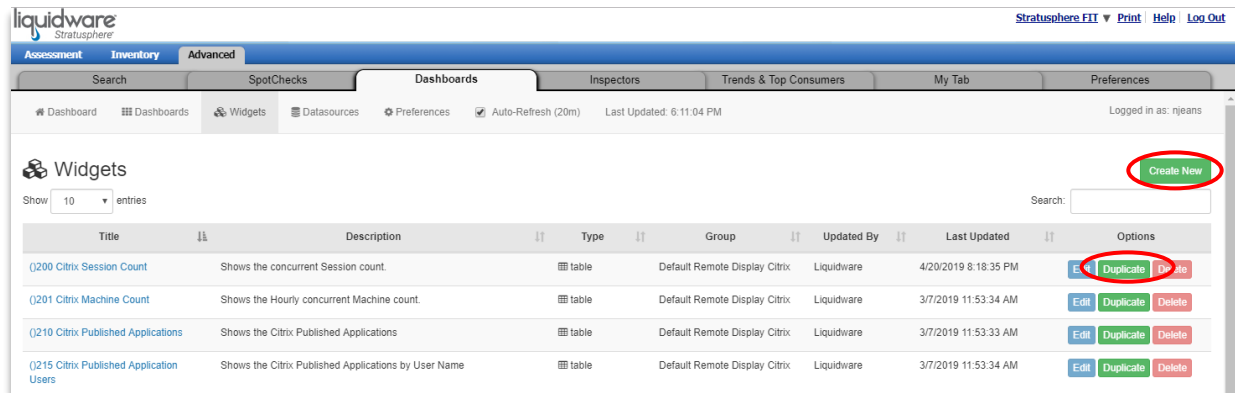
3. Click on the gear icon to assign the widget. Use the drop-down list to select an existing widget and then click on the **Assign widget** button. When back on the dashboard, click **Save Dashboard** to save your widget changes to the existing dashboard. We recommend saving often. If the screen is refreshed,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

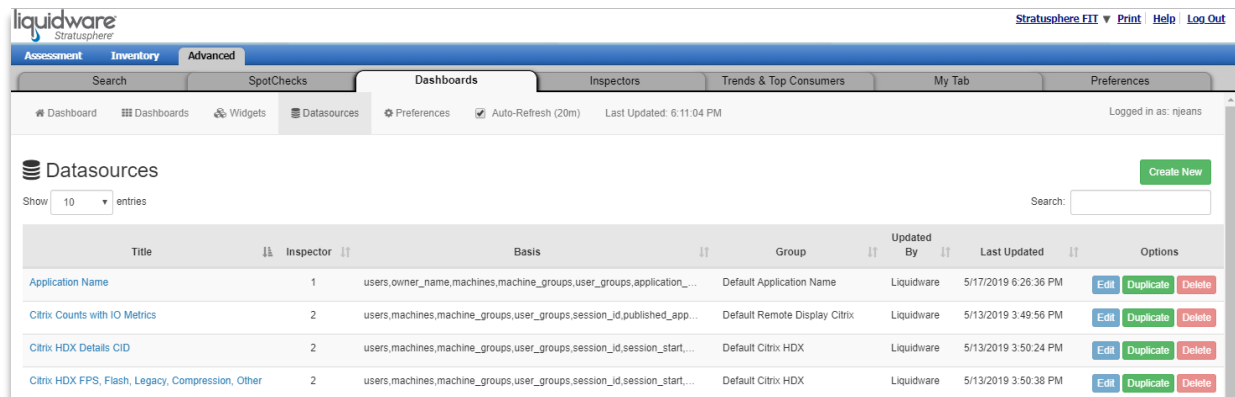
## Creating or Editing Widgets

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.



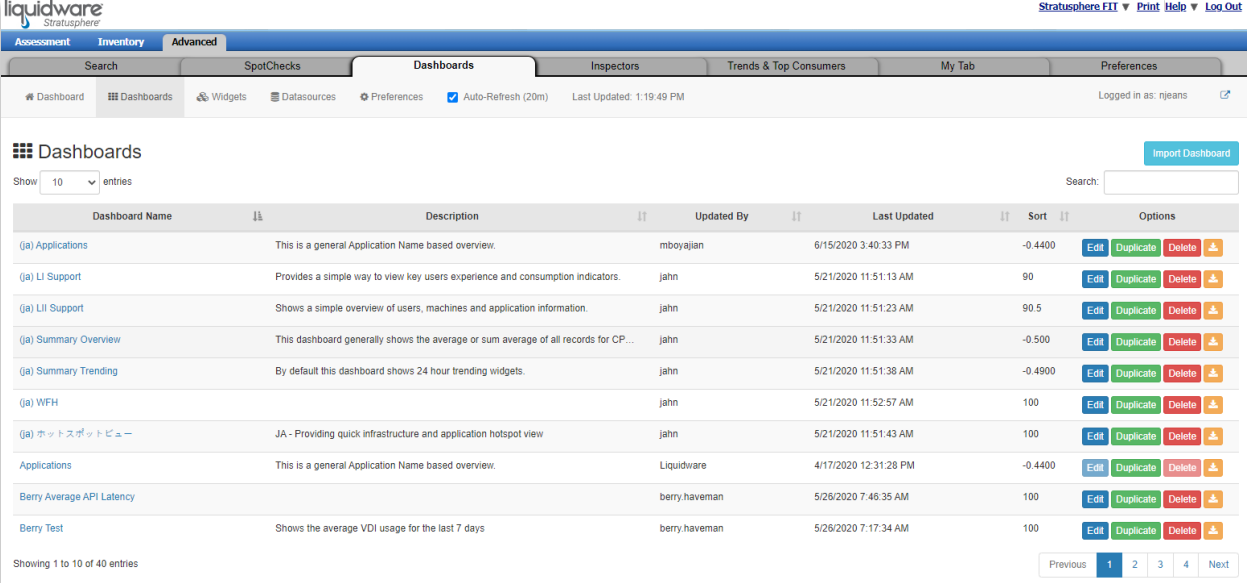
## Creating or Editing Datasources

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, duplicate, delete, or export them. To import new dashboards, click on the **Import Dashboard** button in the top right of the interface.



The screenshot shows the Stratusphere FIT interface with the 'Dashboards' tab selected. The top navigation bar includes 'Assessment', 'Inventory', 'Advanced', 'SpotChecks', 'Dashboards', 'Inspectors', 'Trends & Top Consumers', 'My Tab', and 'Preferences'. The 'Dashboards' sub-menu is open, showing options like 'Dashboard', 'Dashboards', 'Widgets', 'Datasources', 'Preferences', and 'Auto-Refresh (20m)'. The main content area displays a list of dashboards with the following columns: Dashboard Name, Description, Updated By, Last Updated, Sort, and Options. The list includes 10 entries, with the first 9 being default dashboards and the last one being a user-created dashboard. The 'Options' column for each dashboard contains links for 'Edit', 'Duplicate', 'Delete', and 'Export'.

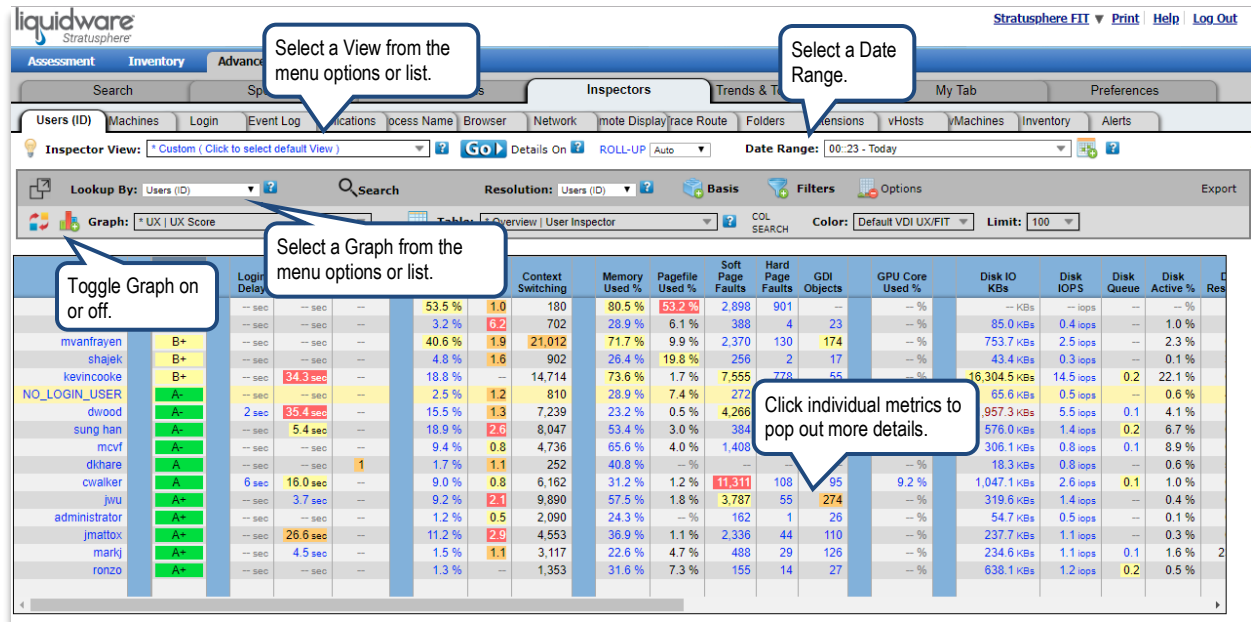
Dashboard Name	Description	Updated By	Last Updated	Sort	Options
(ja) Applications	This is a general Application Name based overview.	mboyajan	6/15/2020 3:40:33 PM	-0.4400	Edit Duplicate Delete Export
(ja) LI Support	Provides a simple way to view key users experience and consumption indicators.	jahn	5/21/2020 11:51:13 AM	90	Edit Duplicate Delete Export
(ja) LII Support	Shows a simple overview of users, machines and application information.	jahn	5/21/2020 11:51:23 AM	90.5	Edit Duplicate Delete Export
(ja) Summary Overview	This dashboard generally shows the average or sum average of all records for CP...	jahn	5/21/2020 11:51:33 AM	-0.500	Edit Duplicate Delete Export
(ja) Summary Trending	By default this dashboard shows 24 hour trending widgets.	jahn	5/21/2020 11:51:38 AM	-0.4900	Edit Duplicate Delete Export
(ja) WFH		jahn	5/21/2020 11:52:57 AM	100	Edit Duplicate Delete Export
(ja) ホットスポットビュー	JA - Providing quick infrastructure and application hotspot view	jahn	5/21/2020 11:51:43 AM	100	Edit Duplicate Delete Export
Applications	This is a general Application Name based overview.	Liquidware	4/17/2020 12:31:28 PM	-0.4400	Edit Duplicate Delete Export
Berry Average API Latency		berry.haveman	5/26/2020 7:46:35 AM	100	Edit Duplicate Delete Export
Berry Test	Shows the average VDI usage for the last 7 days	berry.haveman	5/26/2020 7:17:34 AM	100	Edit Duplicate Delete Export

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

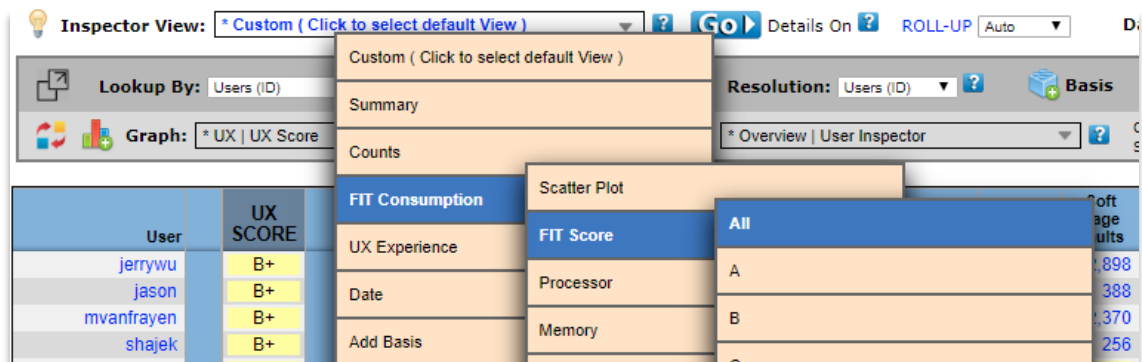
## Understanding the Basics

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 ?

Go

✕

☐ Manual Basis/Resolution

Clear

**Machine**  
☒ Machines  
☐ Machine Groups  
☐ VM Type

**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  
☐ O/S Build Version  
☐ CID Version  
☐ GPU Model Name

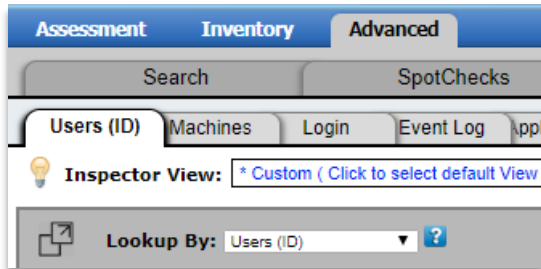
**Network**  
☐ NIC Adapter  
☐ NIC Addresses  
☐ IP Address  
☐ Latency Test IP  
☐ Latency Test Name  
☐ WiFi SSID  
☐ WiFi NIC Mac

**Storage**  
☐ Datastore Name (ID)  
☐ Datastore Name  
☐ Datastore Type  
☐ Disk Name  
☐ Disk Label

**Hosts**  
☐ Current Host  
☐ Historic Host  
☐ vDirectory Name  
☐ vHosts (Metrics)  
☐ vMachines (Metrics)

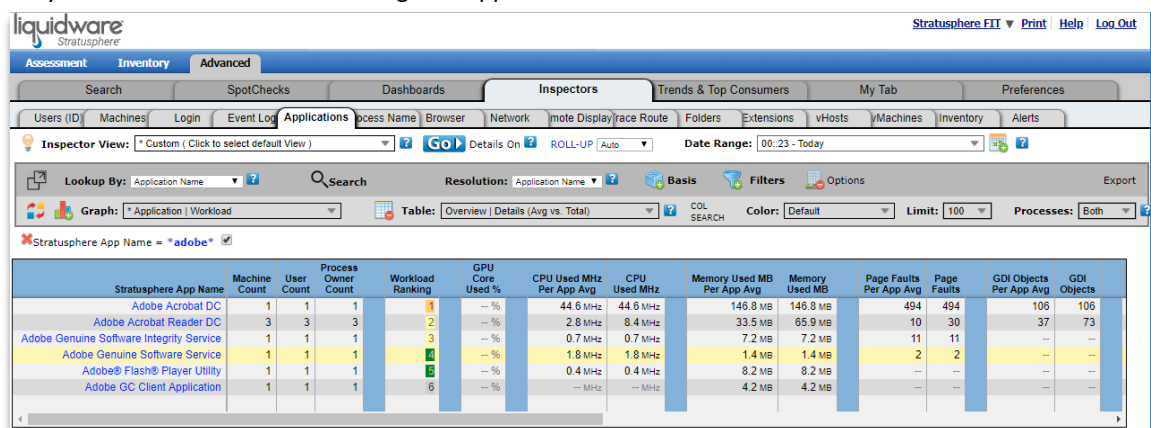
## Inspector Tabs

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.



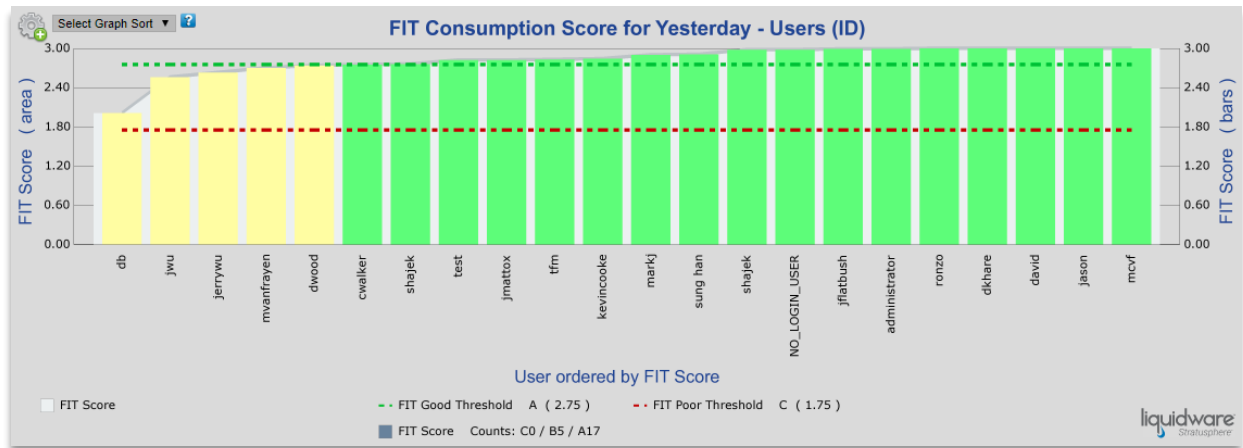
Stratusphere App Name	Machine Count	User Count	Process Owner Count	Workload Ranking	GPU Core Used %	CPU Used Mhz Per App Avg	CPU Used Mhz	Memory Used MB Per App Avg	Memory Used MB	Page Faults Per App Avg	Page Faults	GDI Objects Per App Avg	GDI Objects
Adobe Acrobat DC	1	1	1	1	— %	44.6 MHz	44.6 MHz	146.8 MB	146.8 MB	494	494	106	106
Adobe Acrobat Reader DC	3	3	3	2	— %	2.8 MHz	8.4 MHz	33.5 MB	65.9 MB	10	30	37	73
Adobe Genuine Software Integrity Service	1	1	1	3	— %	0.7 MHz	0.7 MHz	7.2 MB	7.2 MB	11	11	—	—
Adobe Genuine Software Service	1	1	1	4	— %	1.8 MHz	1.8 MHz	1.4 MB	1.4 MB	2	2	—	—
Adobe® Flash® Player Utility	1	1	1	5	— %	0.4 MHz	0.4 MHz	8.2 MB	8.2 MB	—	—	—	—
Adobe GC Client Application	1	1	1	6	— %	— MHz	— MHz	4.2 MB	4.2 MB	—	—	—	—

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. ***Note: The Trace Route tab will only be available if the Connector ID Key is capturing trace route data for your environment.***
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.
14. **Alerts** – Displays alerts generated by Stratusphere.

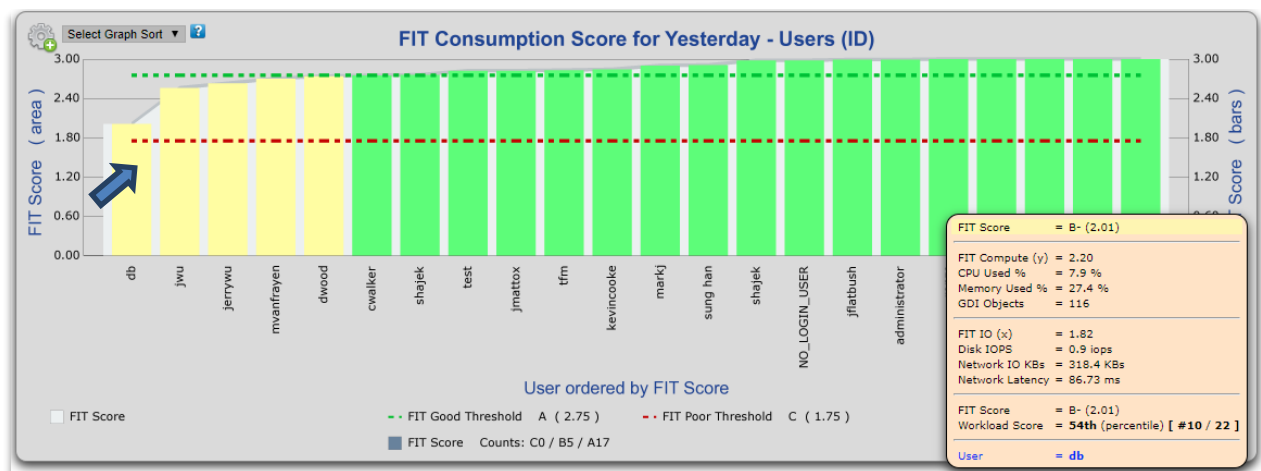
## Inspector Graphs

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 FIT 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.

**Date Range:**   

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

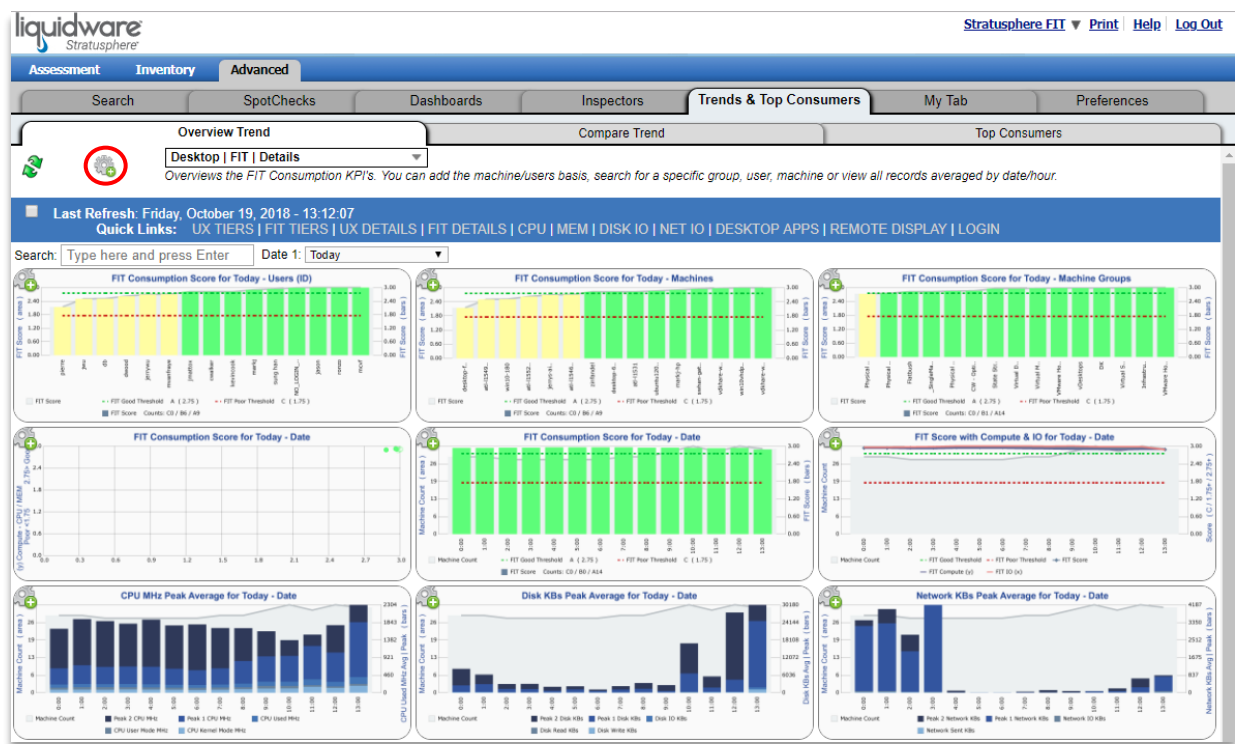



- ✓ **Data Export** – You can export your Inspector results table data to Excel using a unique Cut & Paste Export option or the Spreadsheet option.

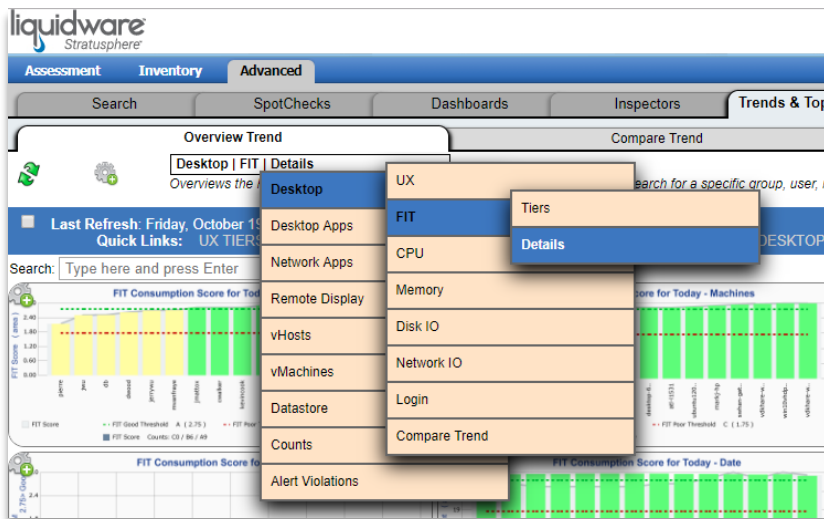
## Advanced Mode Trends & Top Consumers

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.

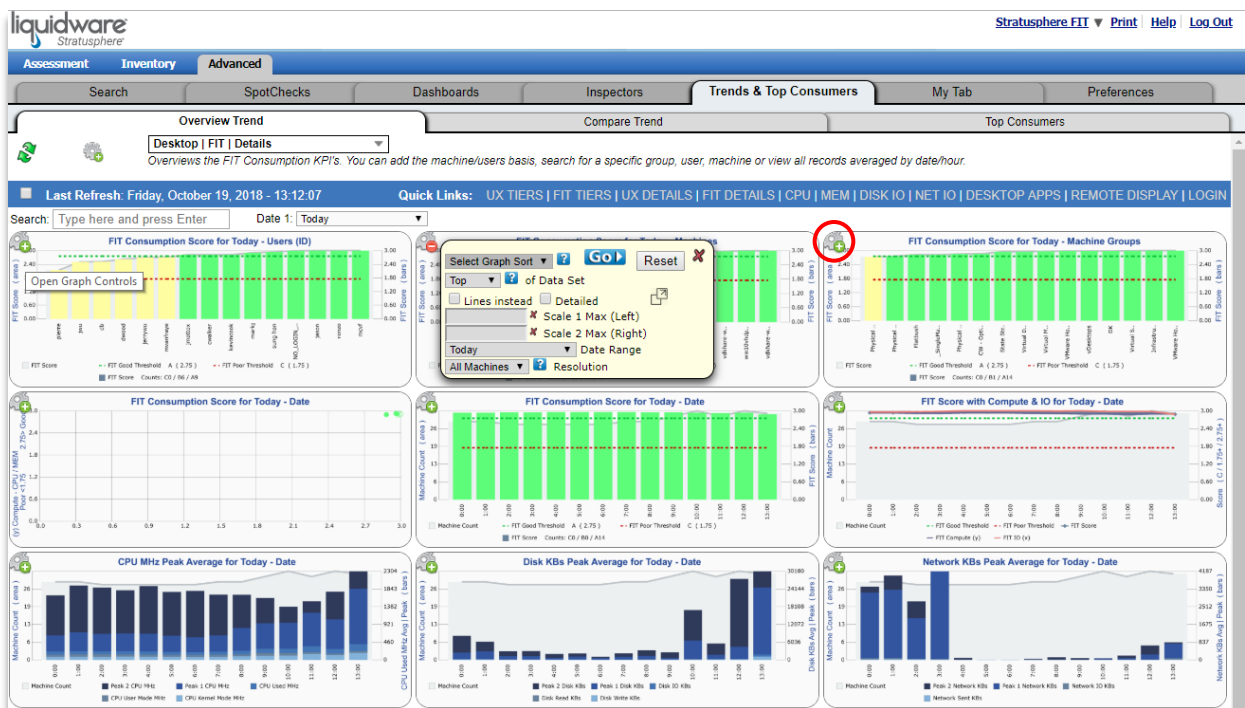
These key metric graphs are grouped together to form dashboards. The Trend & Top Consumers tab offers three major types of dashboards: **Overview Trend**, **Compare Trend**, and **Top Consumers**. **Overview Trend** dashboards display metrics primarily for the current day. These dashboards use a single 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.

**Preferences ?** Save Load Cancel Apply to Session

Cell Options	Default Dates	Table Options	General Options
<input type="checkbox"/> Use European Numbers	Search/SpotCheck Date: Today	<input type="checkbox"/> NO popup menu when clicking cells	<input type="checkbox"/> Activate SpotChecks on load
<input type="checkbox"/> Show Zeros instead of Blanks	Summary Inspector Date: Today	<input type="checkbox"/> Do NOT Color the Spacer Columns	<input type="checkbox"/> Activate Dashboards on load
<input type="checkbox"/> No Commas in metrics	Application Inspector Date: Today	<input type="checkbox"/> No Spacer Columns	<input type="checkbox"/> Activate All Inspectors on load
<input type="checkbox"/> No Words in metrics (Fit/Good)	Network Inspector Date: Today	<input type="checkbox"/> Simple Scroll Box	<input type="checkbox"/> Activate Trends & Top Consumers
<input type="checkbox"/> Words with Metric (UX and Fit Score)	Default Inspector Date: Today	<input type="checkbox"/> Do Not Highlight Links	<input type="checkbox"/> Simple Menus (No CSS Menu)
<input type="checkbox"/> No Units in metrics (MB/sec/iops)	Trend & Top Consumers Date: Today	<input type="checkbox"/> No Colors	<input type="checkbox"/> Turn Off Help
<input type="checkbox"/> No Percent (%) Sign on metrics		<input type="checkbox"/> No User @ Domain Color	<input type="checkbox"/> Turn Off Column Description in Tool Tip
		<input type="checkbox"/> Left-Justify Basis	<input type="checkbox"/> Turn Off Cell Tool Tips (click instead/no hover)
		<input type="checkbox"/> No Domain on User Name	
		<input type="checkbox"/> No Domain on Machine Name	
		<input type="checkbox"/> Right-Justify All Numbers	
		Row Limit:	
		Line Spacing: 2	
		Cell Spacing: 2	
		Table Font Size: 12	

**Custom Dates: YYYY-MM-DD YYYY-MM-DD**

Custom Date 1:

Custom Date 2:

Custom Date 3:

Custom Date 4:

Custom Date 5:

**Graph Options**

☐ Keep Graphs closed by default

☐ Show Graph under the Table by default

Main Graph and Table Color:

Dashboard Graph Color:

**Pop-Out Options**

☐ Open Popouts in Window

☐ Open 360s in Window

☐ Open in Separate Windows

Where to Open:

☐ Turn off Metric links

User ID: njeans Role: 600 Version: 6.1-5 Language: english

## 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.



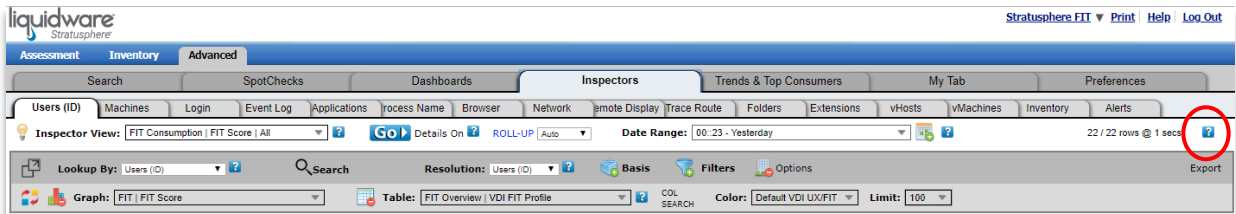
In addition, moving your mouse over any of the metric column headings in the Inspector result tables pops up help information specific to that column. The figure below shows a help description for Disk IOPS.

Context Switching	Memory Used %	Pagefile Used %	Soft Page Faults	Hard Page Faults	GDI Objects	GPU Core Used %	Disk IO KBs
721	34.1%	7.8%	884	43	43	— %	69.5 KBs
406	21.2%	— %	—	—	—	— %	14.0 KBs
4,802	61.1%	— %	—	—	—	— %	263.0 KBs
18,606	71.1%	— %	—	—	—	— %	556.7 KBs
2,043	18.3 %	— %	362	468	43	— %	4,004.5 KBs

Order by: Memory Used %

The is the percent of allocated per machine Memory MB used over the time frame.

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.

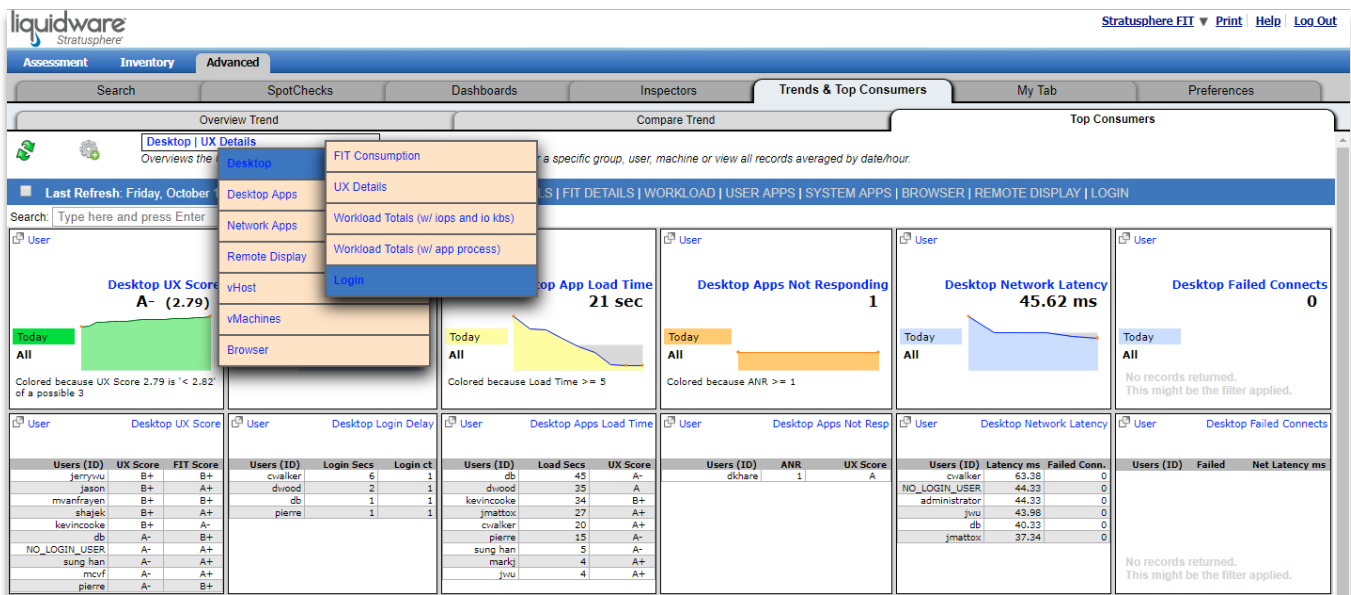
Now Stratusphere provides detailed event tracing of the Windows login process by measuring and reporting on items like:

- 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

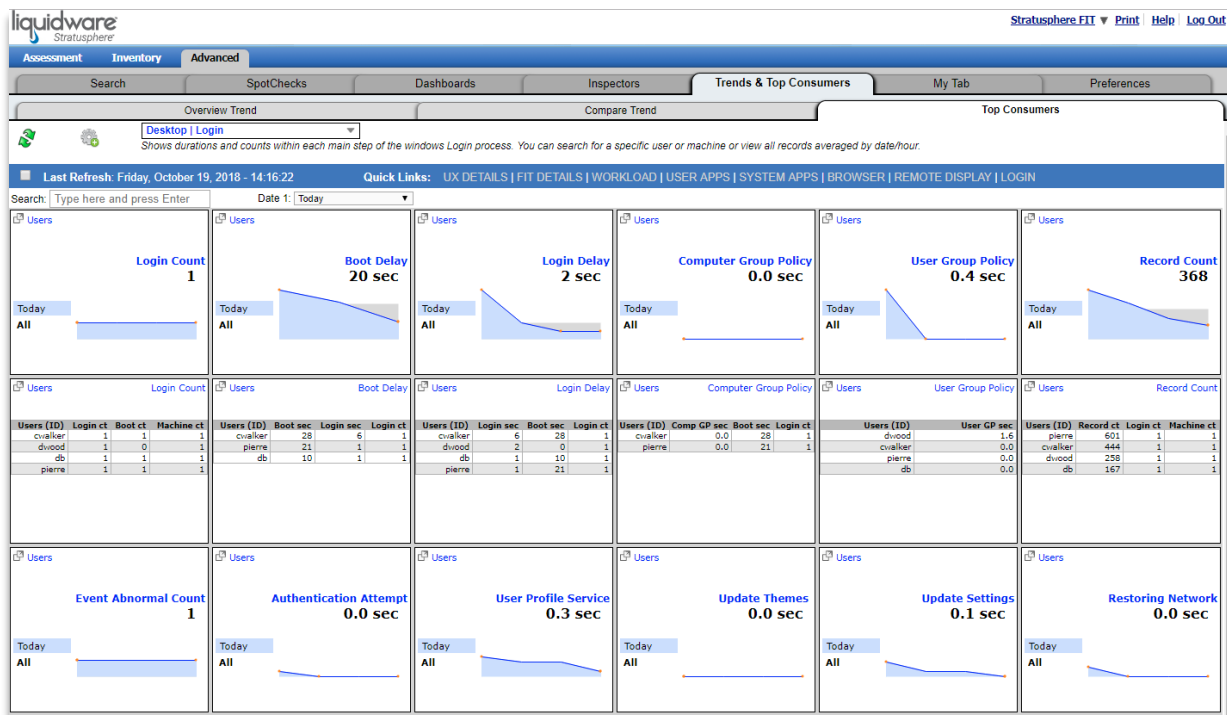
You can trend this information for the user, machine or a pool level by using machine groups.

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.

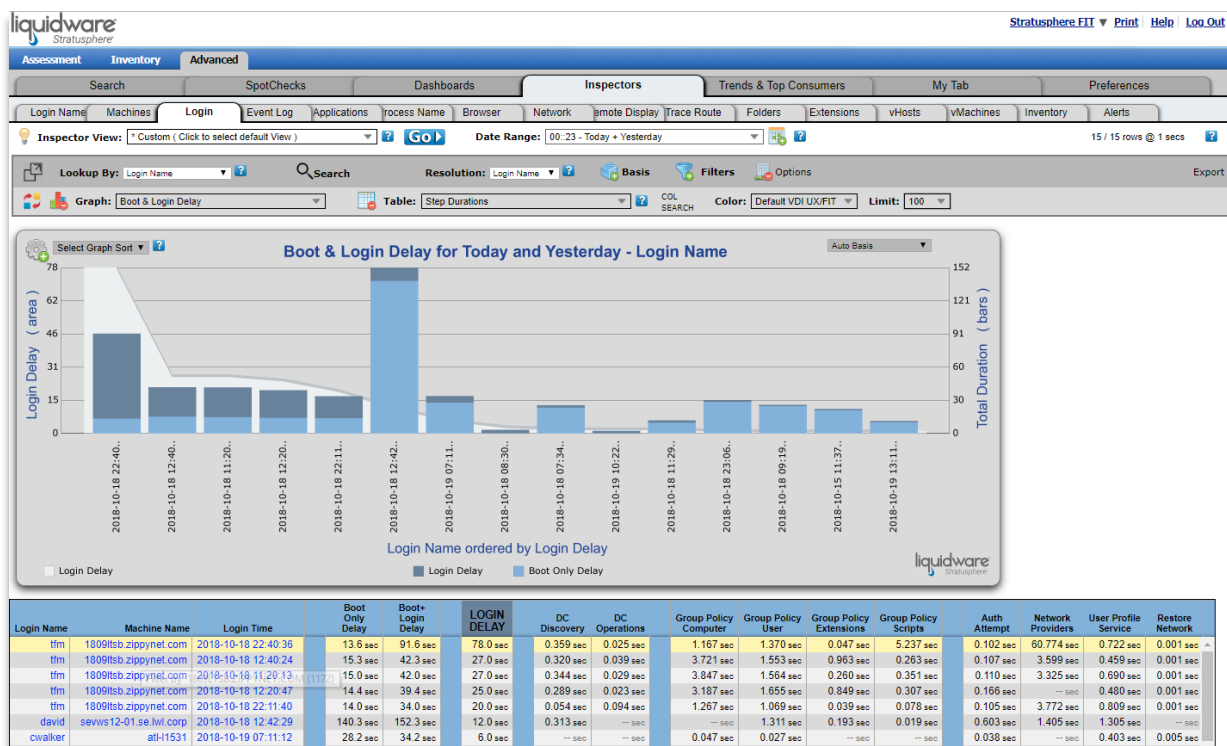
Once the CID Keys in your environment are returning login data, you can use the Advanced Inspectors to provide more data on the login process breakdown. A great place to start is with an overview of logins in your environment. From the **Advanced > Trends & Top Consumers > Top Consumers** tab, click on the gear icon to select the **Desktop > Login** dashboard.



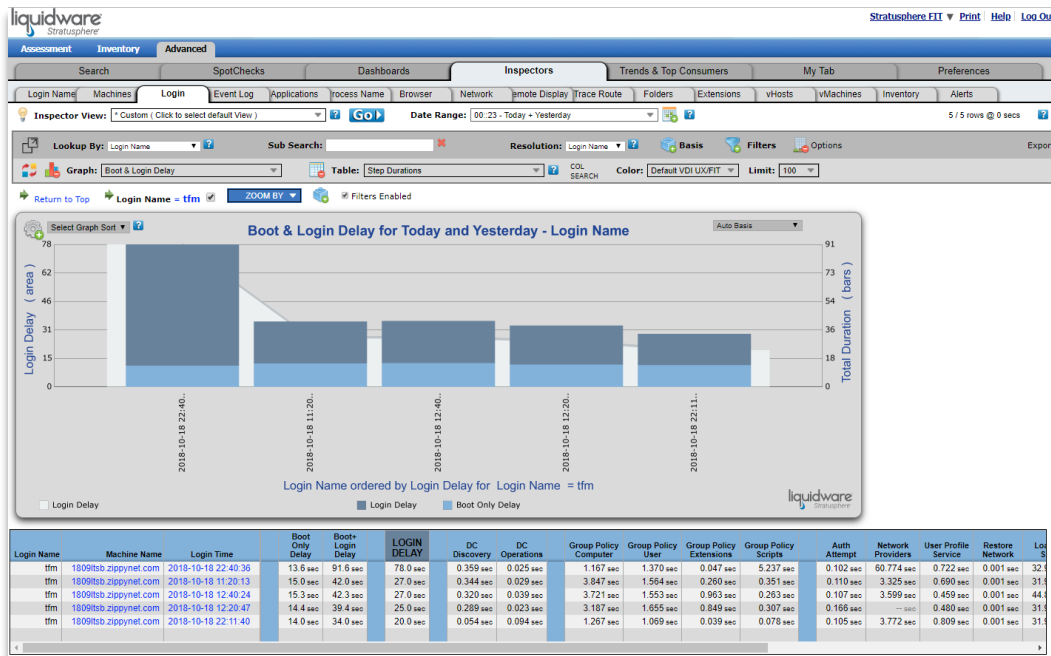
The Login sparkline dashboard shows the duration and counts of each main step of the Windows login process. You can search for a specific user or machine or view all records averaged by date/hour.



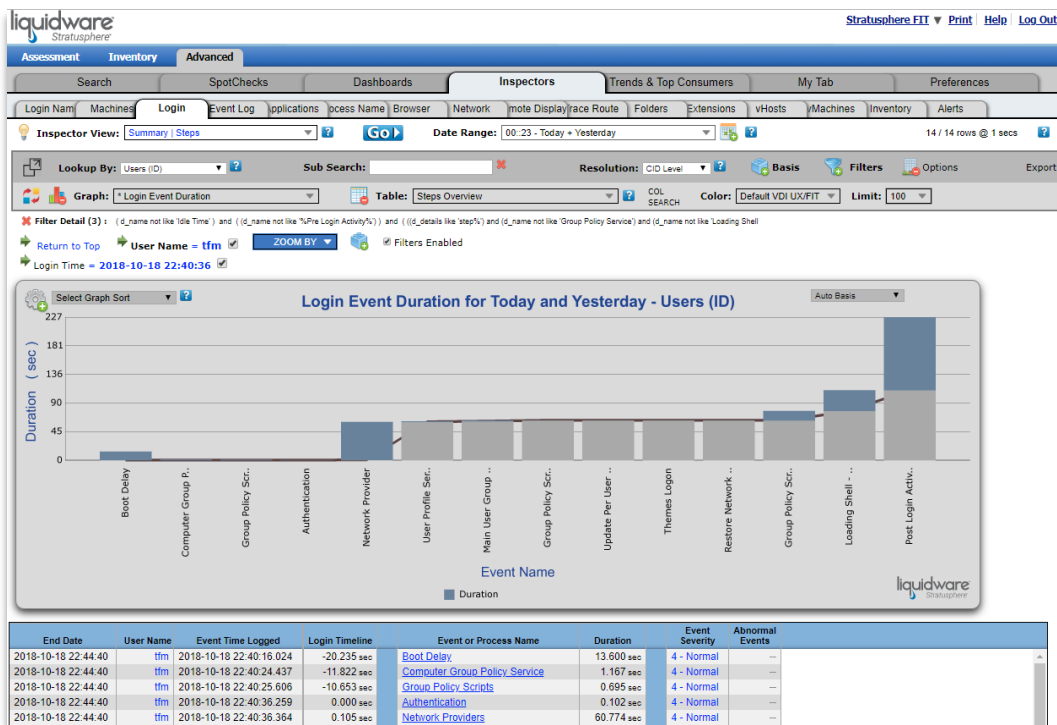
From the **Advanced > Inspectors > Login** tab you can see a Boot and Login delay for your users.



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 within the time period 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 **Network Providers** step in the login process and scrolling through the data shows the order of what is happen and the how long each item took.

The screenshot shows the 'Inspectors' tab in the Liquidware Stratusphere FIT interface. The 'Login' event log is selected, and the 'Network Providers' step is highlighted. The table below shows the duration of various processes during the login sequence.

End Date	User Name	Event Time Logged	Event or Process Name	Duration	Owner	PID	Parent PID
2018-10-18 22:44:40	tfm	2018-10-18 22:40:36.259	Authenticate User	0.102 sec			
2018-10-18 22:44:40	tfm	2018-10-18 22:40:36.259	Authentication	0.102 sec			Step
2018-10-18 22:44:40	tfm	2018-10-18 22:40:36.364	Network Providers	60.774 sec			Step
2018-10-18 22:44:40	tfm	2018-10-18 22:40:36.364	mpnotify.exe	60.774 sec	system	5396	628 C:\Windows\system...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:36.815	WmiApSrv.exe	123.777 sec	system	6140	672 C:\Windows\system...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:37.496	svchost.exe	---	system	5380	672 C:\Windows\system...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:37.651	WmiPrvSE.exe	---	system	5028	824 C:\Windows\sysWO...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:37.697	LwlLogonNotifier.exe	0.991 sec	system	6356	5396 C:\Program Files\Pr...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:37.706	conhost.exe	68.316 sec	system	1276	6356 C:\Windows\sys...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.365	cmd.exe	3.222 sec	system	5708	6724 C:\Windows\system...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.378	conhost.exe	3.211 sec	system	2524	5708 C:\Windows\sys...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.425	chcp.com	0.019 sec	system	5384	5708 chcp 1252
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.511	vhd.exe	0.148 sec	system	5136	6356 C:\Program Files\Pr...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.567	vsdldr.exe	6.177 sec	system	5000	824 C:\Windows\System...
2018-10-18 22:44:40	tfm	2018-10-18 22:40:38.579	WmiPrvSE.exe	104.111 sec	system	5276	824 C:\Windows\sysWO...

Clicking on another step, in this case Post Login Activity, shows a detailed breakdown of what is happening post login.

The screenshot shows the 'Inspectors' tab in the Liquidware Stratusphere FIT interface. The 'Login' event log is selected, and the 'Post Login Activity' step is highlighted. The table below shows the duration of various processes during the post-login sequence.

End Date	User Name	Event Time Logged	Event Severity	Index	Comment	Event or Process Name	Duration	Owner	PID	Parent PID
2018-10-18 22:44:40	tfm	2018-10-18 22:42:21.145	---	---	Start Process	dllhost.exe	5.053 sec	system	11200	824 C:\Windows\system32\dllhost.exe /Processid...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:21.189	---	---	Start Process	Taskmgr.exe	24.937 sec	tfm	11240	7800 C:\Windows\system32\taskmgr.exe /4
2018-10-18 22:44:40	tfm	2018-10-18 22:42:23.868	---	---	Start Process	dllhost.exe	5.087 sec	tfm	10612	824 C:\Windows\system32\dllhost.exe /Processid...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:27.507	Normal	---	Success	Post Login Activity	116.148 sec	---	---	Step
2018-10-18 22:44:40	tfm	2018-10-18 22:42:27.735	---	---	Start Process	svchost.exe	10.120 sec	system	784	672 C:\Windows\System32\svchost.exe -k Networ...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:27.922	---	---	Start Process	SgrmBroker.exe	---	system	10336	672 C:\Windows\system32\SgrmBroker.exe
2018-10-18 22:44:40	tfm	2018-10-18 22:42:28.174	---	---	Start Process	sppsvc.exe	31.364 sec	system	10860	672 C:\Windows\system32\sppsvc.exe
2018-10-18 22:44:40	tfm	2018-10-18 22:42:28.513	---	---	Start Process	svchost.exe	---	system	8648	672 C:\Windows\system32\svchost.exe -k netsvc...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:28.833	---	---	Start Process	svchost.exe	---	system	11148	672 C:\Windows\System32\svchost.exe -k LocalS...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:29.029	---	---	Start Process	svchost.exe	---	tfm	5032	672 C:\Windows\system32\svchost.exe -k Unistac...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:29.303	---	---	Start Process	CompatTelRunner.exe	0.119 sec	system	6616	10668 C:\Windows\system32\compattelrunner.exe -n...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:30.642	---	---	Start Process	lwl_userapp_player64.exe	33.623 sec	tfm	6720	7288 C:\Program Files\ProfileUnity\FlexApplwl_...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:30.658	---	---	Start Process	lwl_userapp_player64.exe	31.027 sec	tfm	3220	7288 C:\Program Files\ProfileUnity\FlexApplwl_...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:30.689	---	---	Start Process	lwl_userapp_player64.exe	26.262 sec	tfm	9752	7288 C:\Program Files\ProfileUnity\FlexApplwl_...
2018-10-18 22:44:40	tfm	2018-10-18 22:42:30.723	---	---	Start Process	lwl_userapp_player64.exe	41.638 sec	tfm	10348	7288 C:\Program Files\ProfileUnity\FlexApplwl_...

## Process Optimization

The Stratusphere CID Key software can be configured to help optimize processes and memory in Windows environments. Process Optimization is a feature that is designed to dynamically raise and lower the priority of processes running in order to increase responsiveness and provide a better user experience. This feature can also provide memory trimming on idle process and the ability to terminate specific processes to keep them from running on your machines. Process Optimization works by granting in-focus applications the CPU resources it needs while guarding against background applications that monopolize resources.

While optimization changes are being made in real time, it should be pointed out that Stratusphere's philosophy is to "do no harm". If a machine is not under stress, then the CID Key optimizer will do nothing. In addition, the optimizer is very polite. The optimizer will first ask a process to lower its CPU priority. If the process says "no", then the optimizer will not force the change nor will it ask the process again. Therefore, you can rest assured that Stratusphere's Process Optimization will not negatively affect your antivirus protection or other important background processes.

To configure Process Optimization for your environment, go to **Hub Administration > Connector ID Keys > Connector ID Key Properties > Process Optimization** in the Hub Administration module. Process Optimization can be configured for specific machines or machine groups. The actual optimization process begins once the CID Key software has been distributed to those machines in your environment.

To see a count summary of the actions taken by the Process Optimizer, navigate to **Advanced > Inspectors > Process Name (& Applications)** tab and select the **Optimizer > Action Counts** Table View.

Search

SpotChecks

Dashboards

Inspectors

Trends & Top Consumers

My Tab

Preferences

Users (ID)

Machines

Login

Event Log

Applications

Process Name

Browser

Network

Remote Display

Trace Route

Folders

Extensions

vHosts

vMachines

Inventory

Alerts

Inspector View

Custom | Click to select default view

GO

Details On

Roll-Up

Auto

Date Ranges

00:23 - Today

100 / 845 rows (cached)

Lookup By:

Process Name

Q Search

Resolutions:

Process Name

Basis

Filters

Options

Graph

Application | Workload

Table

Optimizer | Action Counts

COL Search

Colors:

Default

Limits:

100

Processes:

Both

Page: 1 of 9

( 100 records, 1 - 100 of 845 )

Go

Prev

Next

Process Name	WORKLOAD RANKING	Optimizer Actions	Optimizer Terminate	Optimizer Priority Low	Optimizer Priority Below Normal	Optimizer Priority Normal	Optimizer Priority Above Normal	Optimizer Priority High	CPU Used Mhz Per App Avg	CPU % All Cores	CPU Cores Total Used	Optimizer Persistent Lower	Optimizer Persistent Raise	Window Foreground	Optimizer Trim Memory	Process Privilege Elevated	Machine Count	Process Owner Count	App ID Count	OS Count	PID Count	Active Minutes Per CID	Avg CID Minutes	CID Recs Cnt
chrome	1	805 ct	— ct	312 ct	— ct	330 ct	15 ct	— ct	150.8 MHz	6.3 %	0.57 c	— ct	— ct	15 ct	148 ct	—	3	4	3	3	254	632 mins	634 mins	
java	2	— ct	— ct	— ct	— ct	— ct	— ct	— ct	264.8 MHz	10.1 %	2.02 c	— ct	— ct	— ct	— ct	—	1	10	5	8	6	35	790 mins	699 mins
msedge	3	244 ct	— ct	92 ct	— ct	92 ct	— ct	— ct	1,579.1 MHz	14.6 %	0.58 c	— ct	— ct	60 ct	— ct	—	1	1	1	1	41	878 mins	878 mins	
firefox	4	440 ct	— ct	140 ct	— ct	214 ct	78 ct	— ct	62.9 MHz	0.6 %	0.06 c	— ct	— ct	78 ct	— ct	—	3	3	3	3	23	880 mins	880 mins	
compattelrunner	5	— ct	— ct	— ct	— ct	— ct	— ct	— ct	107.8 MHz	1.6 %	0.13 c	— ct	— ct	— ct	— ct	—	1	3	1	1	2	4	6 mins	12 mins
installcl	6	— ct	— ct	— ct	— ct	— ct	— ct	— ct	499.6 MHz	3.7 %	0.15 c	— ct	— ct	— ct	— ct	—	1	1	1	1	1	1	885 mins	885 mins
clasmcan	7	— ct	— ct	— ct	— ct	— ct	— ct	— ct	302.8 MHz	6.3 %	0.25 c	— ct	— ct	— ct	— ct	—	1	1	2	1	2	7 mins	13 mins	
chrome	8	1,980 ct	— ct	259 ct	— ct	893 ct	738 ct	— ct	184.6 MHz	1.7 %	0.07 c	— ct	— ct	738 ct	— ct	—	1	1	1	1	3	864 mins	878 mins	
evchost	9	7,711 ct	— ct	310 ct	— ct	310 ct	— ct	— ct	8.1 MHz	0.7 %	0.06 c	— ct	— ct	— ct	7,091 ct	—	1	4	6	4	3	451	897 mins	897 mins
teams	10	280 ct	— ct	126 ct	— ct	138 ct	16 ct	— ct	30.2 MHz	1.1 %	0.04 c	— ct	— ct	16 ct	— ct	—	1	2	2	1	118	439 mins	443 mins	
lnfgrd	11	— ct	— ct	— ct	— ct	— ct	— ct	— ct	31.3 MHz	0.5 %	0.05 c	— ct	— ct	— ct	— ct	—	1	4	1	2	3	4	881 mins	881 mins
freshclam	12	— ct	— ct	— ct	— ct	— ct	— ct	— ct	250.6 MHz	2.0 %	0.08 c	— ct	— ct	— ct	— ct	—	1	1	1	1	2	1 mins	6 mins	
kernel_task	13	— ct	— ct	— ct	— ct	— ct	— ct	— ct	831.7 MHz	6.7 %	0.27 c	— ct	— ct	— ct	— ct	—	1	1	1	1	1	1	885 mins	885 mins
google chrome helper (renderer)	14	— ct	— ct	— ct	— ct	— ct	— ct	— ct	1,277.4 MHz	10.3 %	0.41 c	— ct	— ct	— ct	— ct	—	1	1	1	1	1,317	885 mins	885 mins	
installvm pi	15	— ct	— ct	— ct	— ct	— ct	— ct	— ct	74.1 MHz	1.5 %	0.03 c	— ct	— ct	— ct	— ct	—	1	1	1	1	11	218 mins	238 mins	
google chrome	16	— ct	— ct	— ct	— ct	— ct	— ct	— ct	227.1 MHz	1.8 %	0.07 c	— ct	— ct	— ct	— ct	—	1	1	1	1	1	1	885 mins	885 mins
nc	17	— ct	— ct	— ct	— ct	— ct	— ct	— ct	371.9 MHz	8.0 %	0.32 c	— ct	— ct	— ct	— ct	—	2	1	1	1	23	6 mins	39 mins	
worker.py	18	— ct	— ct	— ct	— ct	— ct	— ct	— ct	42.0 MHz	0.9 %	0.04 c	— ct	— ct	— ct	— ct	—	2	1	1	1	17	7 mins	38 mins	
system	19	— ct	— ct	— ct	— ct	— ct	— ct	— ct	67.5 MHz	1.1 %	0.10 c	— ct	— ct	— ct	— ct	—	1	4	1	1	3	4	881 mins	881 mins

Additional Optimizer tables are available such as **Foreground and Trimming and Details**.

For additional information, run some of our standard reports in the Stratusphere Report Library. Go to **Diagnostics > Reports** and select the "Process Optimization Reports" category.

## Getting Help with Stratusphere

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

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](https://www.liquidware.com/). 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](https://www.liquidware.com/) 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 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