SQL WORKLOAD ANALYSIS

1.7.X

Table of Contents

1 See Previous Versions 7
2 Release Notes 8
2.1 New Features 9
2.1.1 1.7.4 New Features 9
2.2 Fixed Issues 10
2.2.1 1.7.4 Fixed Issues 10
2.3 Previous features and fixed issues 11
2.3.1 1.7.3 New Features 11
2.3.2 1.7.3 Fixed Issues 11
2.3.3 1.7.2 New Features 11
2.3.4 1.7.2 Fixed Issues 11
2.3.5 1.7.1 New Features 11
2.3.6 1.7.1 Fixed Issues 12
2.3.7 1.7.0 New Features 12
2.3.8 1.7.0 Fixed Issues 12
2.3.9 1.6.8 New Features 12
2.3.10 1.6.8 Fixed Issues 12
2.3.11 1.6.7 New Features 13
2.3.12 1.6.7 Fixed Issues 13
2.3.13 1.6.6 New Features 13
2.3.14 1.6.6 Fixed Issues 13
2.3.15 1.6.5 New Features 13
2.3.16 1.6.5 Fixed Issues 14
2.3.17 1.6.4 New Features 14
2.3.18 1.6.4 Fixed Issues 14
2.3.19 1.6.2 New Features 14
2.3.20 1.6.2 Fixed Issues 14
2.3.21 1.6.1 New Features 14
2.3.22 1.6.1 Fixed Issues 15
2.3.23 1.5 New features 15
2.3.24 1.5 Fixed Issues 15
2.4 Known Issues 16

2.4.1 Known Issues for 1.7.4 ... 16
2.5 Previous known issues ... 17
2.5.1 Known Issues for 1.7.3 ... 17
2.5.2 Known Issues for 1.7.2 ... 17
2.5.3 Known Issues for 1.7.1 ... 17
2.5.4 Known Issues for 1.7.0 ... 17
2.5.5 Known Issues for 1.6.7 ... 18
2.5.6 Known Issues for 1.6.6 ... 18
2.5.7 Known Issues for 1.6.5 ... 18
2.5.8 Known Issues for 1.6.1 ... 19
2.5.9 Known Issues for 1.5 ... 19
3 Welcome to SQL Workload Analysis ... 20
3.1 What is SQL Workload Analysis? ... 21
3.2 How does SQL Workload Analysis help me? ... 22
3.3 Find answers ... 23
3.3.1 Using Help ... 24
4 Get Started ... 25
4.1 Installation and deployment ... 26
4.1.1 IDERA Dashboard product components and architecture ... 27
4.1.2 SQL Workload Analysis product components and architecture ... 28
4.1.3 SQL Workload recommended server sizing guidelines ... 29
4.1.4 Software requirements ... 30
4.1.5 Required accounts and permissions ... 32
4.1.6 Installation instructions ... 33
4.2 Log in to the IDERA Dashboard ... 45
5 The SQL Workload Analysis Dashboard ... 46
5.1 SQL Workload Analysis Dashboard ... 46
5.2 Total in DB Highlights ... 48
5.3 Total in DB Trending ... 49
5.4 Top Databases ... 50
5.4.1 Top Tables ... 51
5.5 Page Faults/sec ... 52
5.6 Top SQL Stored Procedures or Batches ... 53

5.7 Top SQL Statements 54
5.7.1 Finding and next steps 55
5.8 Top Logins 56
5.9 Top Machines 57
5.10 Top Programs 58
6 Administering SQL Workload Analysis 59
6.1 Register Instances for monitoring 60
6.1.1 Access the Add Instance Wizard 60
6.2 Manage registered Instances 63
6.3 Manage License 64
6.4 Storage 65
6.5 Purge Process 67
6.5.1 Alter Purge Schedule 67
6.5.2 Purge PMDB Now 67
7 Enhanced Logging 69
8 Set your SQL Workload Analysis grooming schedule 70
8.1 SQL Workload Analysis Cleanup App 72
9 Monitoring EMC storage using SQL Workload Analysis 73
9.1 Planning for EMC Solution Enabler installation 74
9.1.1 Which servers require Solutions Enabler installation? 74
9.1.2 Network and security requirements 74
9.1.3 Installation diagram 74
9.1.4 About obtaining Solutions Enabler 74
9.1.5 Virtualization considerations 75
9.2 Installing Solutions Enabler 76
9.2.1 On the SQL Workload Analysis server 76
9.2.2 On each monitored server 77
9.2.3 Verifying Solutions Enabler's Deployment and Configuration 79
9.3 Finalizing SQL Workload Analysis Storage configuration 80
10 Customize SQL Workload Analysis layout 81
11 The IDERA Dashboard 82
11.1 What is the IDERA Dashboard? 82

11.2 What actions can be performed in the Overview tab of the IDERA Dashboard? 82
11.3 What actions can be performed in the Details view of the IDERA Dashboard? 83
11.4 What actions can be performed in the Alerts view of the IDERA Dashboard? 83
11.5 What actions can be performed in the Administration view of the IDERA Dashboard? 83
11.6 Managing users in the IDERA Dashboard 86
11.6.1 Add a user / group 86
11.6.2 Edit a user/group 87
11.6.3 Delete a user / group from the IDERA Dashboard 87
11.7 Managing products in the IDERA Dashboard 88
11.7.1 Edit a Product 88
11.7.2 Delete a Product 88
11.7.3 Migrate Product 88
11.7.4 Register a Product 89
11.8 Managing Instances in the IDERA Dashboard 90
11.8.1 Permissions for Managing Instances 91
11.9 Configure navigation order in the IDERA Dashboard 92
11.10 Configure the IDERA Dashboard view 93
11.11 Managing Tags 94
11.12 Sending notifications 95
11.13 Manage Licenses 96
12 Frequently asked questions 97
12.1 Where is SQL Workload Analysis installed? Should I install anything on the database machine? 97
12.2 How is SQL Workload Analysis different from the Precise for SQL Server Enterprise edition? 97
12.3 How can I pause monitoring an instance? 97
12.4 I see a performance peak in one of the graphs. How do I zoom in to investigate it further? 97
12.5 Data has stopped being collected. How do I troubleshoot this? 97
12.6 How to monitor in failover cluster configuration? 97
12.7 How do I upgrade from trial to standard version to continue monitoring beyond the trial's period? 98
12.8 How can I control the time frame of the displayed data? 98

12.9 What does "Total in DB" measure? 98
12.10 What is the refresh rate of the SQL Workload Analysis views? 98
12.11 What are the units I see next to the time displays (including in the Y axis of the graphs)? ..98
12.12 For some SQL statements, why don't I see summary values regarding physical reads, logical reads, etc.?..... 98
12.13 What are the "Top Accessed Objects" I see for a SQL statement?..... 98
12.14 How should I work with the Locking Sessions (Blockers) portlet to analyze locking situations? 98
12.15 The main dashboard shows only top databases/statements. How can I see more in the list?..... 99
12.16 What does the "Table Cardinality" column mean in the statement's execution plan's display?..... 99
12.17 Locks trending graph shows lock types including "MD" prefix – what is it? 99
12.18 How can I extend SQL Workload Analysis' visibility into EMC storage? 99
12.19 Why do certain statements show zero execution counts?..... 100

1 See Previous Versions

Go to Version 1.6.x Go to Version 1.0.x

IDERA SQL Workload Analysis provides a granular breakdown of SQL Server wait states with easy drill-down to isolate problems quickly. It delivers valuable real-time and historical data to help tune queries as well as actionable recommendations to improve performance.

The SQL Workload Analysis dashboard displays trending database activity and top utilizing SQL statements, logins, machines, and programs. This makes it easy for DBAs, developers, and system admins to identify problems and develop remedies across a number of situations. With it they can:

- Know immediately where databases are spending time.
- Quickly isolate slow SQL statements and drill down for actionable advice in as little as 1 click.
- Perform real-time analysis with continuous SQL sampling intervals as fast as 1 sec.
- Investigate historical query plan trends in SQL Server 2005 and newer systems.
- Utilize automatic recommendations to improve query performance.

2 Release Notes

IDERA SQL Workload Analysis provides a granular breakdown of SQL Server wait states with easy drill-down to isolate problems quickly. It delivers valuable real-time and historical data to help tune queries as well as actionable recommendations to improve performance. The SQL Workload Analysis dashboard displays trending database activity and top utilizing SQL statements, logins, machines, and programs. This makes it easy for DBAs, developers, and system admins to identify problems and develop remedies across a number of situations.

To get a quick glimpse into the features, fixed issues, and known issues in this release of SQL Workload Analysis, review the following sections of the Release Notes:

- Key new features in this release.
- Fixed issues in this release.
- Known issues in this release.

2.1 New Features

SQL Workload Analysis provides the following new features:

2.1.1 1.7.4 New Features

No new features for this release.

Please refer to this page to see features on previous releases.

2.2 Fixed Issues

2.2.1 1.7.4 Fixed Issues

SQLWA-1257 SQLWA is successfully upgraded from SWA 1.7.1, 1.7.2, and 1.7.3 to 1.7.4.

SQLWA-1258 Removed Postgres & Libcurl references from SQLWA.

SQLWA-1259 Upgraded ActiveMQ from 5.16.3 to 5.16.6.

SQLWA-1260 Upgraded SFL4J log4j version from 1.6.4 to 1.7.36.

2.3 Previous features and fixed issues

2.3.1 1.7.3 New Features

SWA 1.7.3 provides a complete revamp of the grooming (purge) process which sees a reduction in the size of the SWA repository and the size of the SQL Transaction Log. This prevents the SWA repository from growing too large and the SQL Transaction Log from growing out of control.

SWA 1.7.3 is also compatible with the latest IDERA web access framework version allowing improved web access experience.

2.3.2 1.7.3 Fixed Issues

SQLWA-1164 The purge process needs to be rewritten for SQL Server architecture.

SQLWA-1198 CPU spikes when SQLDM and SQLWA running on the same machine and it goes to 100%.

SQLWA-1202 Remote SQL Server instances are showing question marks in SWA 1.7.2.

SQLWA-1194 Unable to add Server due to different DB Server Collation settings

SQLWA-1216 Support for SQL Server 2022.

SQLWA-1217 SWA PMDB support on SQL Server 2022 instance.

2.3.3 1.7.2 New Features

No new features for this release.

2.3.4 1.7.2 Fixed Issues

SQLWA-1154 Data randomly stops processing and is not available in SWA 1.7.0

SQLWA-1150 Broken Wiki Links to be fixed.

SQLWA-1144 Installation fails using the special character instance.

SQLWA-1124 Able to monitor 2 servers while SWA is licensed for 1 server only.

SQLWA-1116 SQLWA Repository DB credentials - including password, logged as plain text in the logs.

SQLWA-1184 SQLWA 1.7.2 should be packaged with CWF 4.7

SQLWA-1157 Run as administrator on exe file for the 1.7.1#16 the build number is showing 1.7.0

SQLWA-1161 Log4j security vulnerability found in the Workload Analysis component.

2.3.5 1.7.1 New Features

In SQLWA version 1.7.1, upgrade support has been added from the 1.7.0 version. Although SQLWA 1.7.1 can be installed in more than one way, you can ONLY upgrade to 1.7.1 version from 1.7.0 version, but not from the other previous versions.

SQLWA 1.7.1 can be installed in the following ways, depending on the currently installed 1.7.0 version:

- If this is the first time you are installing SQLWA, install version 1.7.1 as described in the Clean installation of the SQLWA Framework section of the SQLWA Installation guide.
- If you have installed the 1.7.0 version already and you want to upgrade it to the version 1.7.1, follow the specific Upgrade instructions.

2.3.6 1.7.1 Fixed Issues

SQLWA-1119 SWAREPODB tables created in Master database.

SQLWA-1135 Use default Admin account when installing SWA with the Idera Dashboard.

SQLWA-1137 Install fails when account isn't default.

SQLWA-1140 Install issues with mix of windows and sa accounts.

SQLWA-1147 SQLWA with IDERA Dashboard repository in the remote machine is not working.

2.3.7 1.7.0 New Features

Support has been added for the following components:

1. Collector re-architecture has been done to separate the services for SQL authentication, monitoring instances for user defined number of services.
2. Upgraded the active MQ to the version 5.16.3 and tomcat server versions to 9.0.52 resolve security and EOL issues.
3. Implement a solution for rolling up fast growing tables such as PW_SQPS_SQL_STATISTIC_H.

2.3.8 1.7.0 Fixed Issues

SQLWA-1108 Indexes are no longer missing from SQLWA Tables.

SQLWA-1107 SQLWA log files are not growing out of control and filling up the C: drive anymore.

SQLWA-1103 A wrong Program Name no longer appears on the UAC wizard.

SQLWA-1102 The ActiveMQ site has no longer a security concern, taking the default credentials.

2.3.9 1.6.8 New Features

- SQL Workload Analysis now uses SQL Server repository databases for its PMDB.
- SQL Workload Analysis can now perform a connectivity test to monitored instances.

2.3.10 1.6.8 Fixed Issues

SQLWA-1047 The Apache Tomcat default files security Vulnerabilities on WorkLoadAnalysis servers has been fixed.

SQLWA-1035 SQL Workload Analysis is now connecting to instances with TLS 1.0 disabled and cyphers limited to AES 128 and above.

2.3.11 1.6.7 New Features

No new features for this release.

2.3.12 1.6.7 Fixed Issues

SQLWA-529 SQL Workload Analysis is no longer stopping collecting and displaying data.

SQLWA-892 The Postgress size is no longer causing high memory usage in SQL Workload Analysis.

SQLWA-1030 The SQLWA collection service is no longer stopping unexpectedly.

SQLWA-1054 SQLWA now correctly collects data and the added instances are showing their correct status.

SQLWA-1031 A SQLWA process is no longer causing the SQL Server session blocking.

SQLWA-1033 SQLWA now correctly processes data that was randomly stopping under certain conditions.

SQLWA-1036 The Postgress Purge is no longer causing deadlocks or stalling the data collection in SQLWA.

SQLWA-1048 The idera_swa_postgresql service no longer needs to be restarted to correctly show SQLWA in the IDERA Dashboard.

2.3.13 1.6.6 New Features

- SQL Workload Analysis upgraded all critical components to the latest compatible releases.

2.3.14 1.6.6 Fixed Issues

SQLWA-890 The error 'SQLWA is unable to connect to the SQL Server instance. Please verify that the instance name is spelt correctly' is no longer displaying when adding new instances after upgrading SQL Workload Analysis.

SQLWA-900 SQLWA now correctly processes data that was randomly stopping under certain conditions.

SQLWA-991 The Home and Administration tabs are loading and displaying data properly.

SQLWA-992 SQL Workload Analysis is no longer prompting exceptions when adding instances

SQLWA-993 SQL Workload Analysis now correctly displays the details of the added instance in the Finish screen of the Add Instances wizard.

SQLWA-994 SQL Workload Analysis now correctly finishes its installation process.

SQLWA-1000 SQL Workload Analysis now correctly displays the tool tips for the vertical and horizontal bars.

SQLWA-1001 The license details are correctly displaying under the Manage License option.

SQLWA-1002 The data now correctly loads when clicking the "View execution plan" button.

2.3.15 1.6.5 New Features

- SQL Workload Analysis services can be configured to use non-default port numbers.

2.3.16 1.6.5 Fixed Issues

SQLWA-538 SQL Workload Analysis now correctly parses collected decimal numbers using comma instead of a decimal point

SQLWA-647 Upon removing a monitored instance, SQL Workload Analysis will promptly purge data related to the instance. Previously, SQL Workload Analysis would retain the data until it is fully groomed from the repository based on the grooming schedule.

SQLWA-800 SQL Workload Analysis now correctly adds new monitored instances based on the number of available licenses within the license key.

SQLWA-889 SQLWA now correctly registers instances after performing an upgrade.

2.3.17 1.6.4 New Features

No new features for this release.

2.3.18 1.6.4 Fixed Issues

- SQL Workload Analysis now correctly collects data for the monitored instances
- The SQL Workload Analysis wizard no longer becomes unresponsive when adding instances
- SQL Workload Analysis now correctly displays data for the monitored servers
- The Administration options: "Add Instances", "Manage Instances", and "Manager License" are now displaying correctly
- SQL Workload Analysis is no longer stopping the collection of data randomly
- SQL Workload Analysis widgets are now loading properly
- A fix has been applied to correct the displayed error: "I/O Error: DB server closed connection"
- Accounts that are part of an active directory group are no longer reporting errors when accessing the IDERA Dashboard
- The CPU utilization is no longer high or constantly rising up when running SQL Workload Analysis
- SQL Workload Analysis now correctly monitors and re-registers instances
- SQL Workload Analysis now correctly removes instances
- SQL Workload Analysis now correctly processes and displays collected data

2.3.19 1.6.2 New Features

- SQL Workload Analysis 1.6.2 includes a new licensing library, which only affects products with expiring licenses.

2.3.20 1.6.2 Fixed Issues

- SQL Workload Analysis is no longer displaying errors when viewing execution plans.
- SQL Workload Analysis is no longer having issues when installed with non-default Dashboard locations

2.3.21 1.6.1 New Features

- SQL Workload Analysis allows you to configure the storage location for the SQLWA database and the message queue files.
- New widget "Top SQL Stored Procedure" with drill-down capability.
- Launch SQL Diagnostic Manager in context to specific time-range from SQL Workload Analysis.

2.3.22 1.6.1 Fixed Issues

- SQL Workload Analysis is collecting information normally for its respective analysis.
- The “Login Failed. The login is from an untrusted domain and cannot be used with Windows authentication” message is no longer displaying when registering instances in SQL Workload Analysis.
- The error "Reason: ERROR: 22001: value too long for type character varying(40)) is no longer displying when entering credentials during installation.

2.3.23 1.5 New features

- Integration with the IDERA Dashboard
- Unified installer for both products: IDERA Dashboard & SQL Workload Analysis
- Drill-down capability for top programs, top machines, and top logins
- Add new instances using existing list of registered instances in the IDERA Dashboard

2.3.24 1.5 Fixed Issues

- SWA no longer requires a server reboot, when from time to time, stops collecting data.

2.4 Known Issues

2.4.1 Known Issues for 1.7.4

Installation

SQL Workload Analysis installation fails when entering a SQLWA repo name with some special characters.

IDERA Dashboard

Whenever a remote instance is added in SQLWA using SQL authentication, an 'unknown' status is shown.

2.5 Previous known issues

2.5.1 Known Issues for 1.7.3

Installation

SQL Workload Analysis installation fails when entering a SQLWA repo name with some special characters.

IDERA Dashboard

Whenever a remote instance is added in SQLWA using SQL authentication, an 'unknown' status is shown.

2.5.2 Known Issues for 1.7.2

Installation

SQL Workload Analysis installation fails when entering a SQLWA repo name with some special characters.

IDERA Dashboard

Whenever a remote instance is added in SQLWA using SQL authentication, an 'unknown' status is shown.

2.5.3 Known Issues for 1.7.1

Installation

Issue with SQLWA remote registration and remote database installation.

Upgrade

SQLWA Upgrade fails when trying to upgrade from the 1.7.0 to the 1.7.1 version.

IDERA Dashboard

Added instances on the IDERA Dashboard cannot be viewed.

Monitored Instances

Monitoring instance status is showing a question mark state.

2.5.4 Known Issues for 1.7.0

Installation

Issue with SQLWA remote registration and remote database installation.

IDERA Dashboard

SQLWA is not loading the Dashboard overview page and SQLWA Home page when using a hostname in the IE browser's URL bar.

Navigating back from the Top Logins page does not load the view and data in the right grid.

Monitored Instances

Monitoring instance status is showing a question mark state.

Monitored Servers

You are able to monitor 2 servers while SQLWA is licensed for 1 server only.

2.5.5 Known Issues for 1.6.7

Upgrade

If you encounter issues when upgrading to SQL Workload Analysis 1.6.7, restart the services after performing the upgrade. It may take a couple of minutes to load the SQL Workload Analysis homepage and the data widgets.

IDERA Dashboard

SQL Workload Analysis cannot be register in a preinstalled IDERA Dashboard 4.6

2.5.6 Known Issues for 1.6.6

Installation

SQL Workload Analysis is no longer supporting Windows 2008.

2.5.7 Known Issues for 1.6.5

Encryption

SQL Workload Analysis may prompt an error when adding an instance where Force Encryption is required using Windows Authentication in earlier Microsoft SQL Server version (>11.0). For more information, please visit TLS 1.2 support for Microsoft SQL Server.

Upgrade

Users may encounter error messages when registering SQL Workload Analysis, while upgrading. To solve this problem, change the port number located in the ps_registration table to the port number on which IderaCoreService is running. For more information, contact IDERA support.

2.5.8 Known Issues for 1.6.1

Installation

Compatibility

SQL Workload Analysis is not supported in Windows Vista 32-bit machine.

Uninstallation

Exception shown when uninstalling

After uninstalling SQL Workload Analysis, the product is still shown under the managed products and an exception is seen when clicking SQLWA link after it was uninstalled.

2.5.9 Known Issues for 1.5

IDERA Dashboard

Unsuccessful migration of SQL Workload Analysis

After installation, the IDERA Dashboard is unable to successfully migrate SQL Workload Analysis to a different (remote) installation of the IDERA Dashboard. The suggested workaround is to perform a new installation in the target server.

Monitored Instances

Error adjusting the column width of the Monitored Instances list

The handlers that are used to adjust the width of the columns can go off-screen after performing an adjustment. The suggested workaround is to refresh (F5) the web browser to reset the columns width to their default settings.

License Management

Error updating license key information after the trial license expires

SQL Workload Analysis is unable to register a new license key after the trial license has expired. The suggested workaround is to register new license key information before the trial period expires.

3 Welcome to SQL Workload Analysis

This wiki helps you understand IDERA SQL Workload Analysis characteristics and features.

Need help using SQL Workload Analysis? See the following topics:

- SQL Workload Analysis FAQ
- Monitoring EMC storage using SQL Workload Analysis

3.1 What is SQL Workload Analysis?

IDERA SQL Workload Analysis monitors SQL Server instances remotely (agent-less), from a dedicated framework machine. SWA has a web-based interface (IDERA Dashboard), which you can access from a web browser. Click here to learn more about the IDERA Dashboard.

3.2 How does SQL Workload Analysis help me?

SQL Workload Analysis enables DBAs to identify, isolate, and resolve tough performance issues with specific SQL transactions or workloads in just a few mouse clicks.

3.3 Find answers

This documentation set includes a comprehensive online Help system as well as additional resources that support you as you install and use the product. You can also search the IDERA Solutions Knowledge Base, available at the IDERA Customer Support Portal.

3.3.1 Using Help

The IDERA wiki includes a comprehensive online Help system as well as additional resources that support you as you install and use IDERA products. You can also search multiple IDERA support solutions, available at Customer Support Portal.

Additionally, IDERA helps you by providing:

- 24/7 technical support for critical issues.
- Availability to report cases and access a web-based customer portal for update status.

This wiki includes the following Web browser minimum requirements:

- Internet Explorer 9.0
- Mozilla Firefox 4
- Google Chrome 6

You can access the IDERA Help system through the **Help** icon on the top right section of your window or by pressing F1 on the section where you need more information.

You can print a help topic from the wiki using the Print function in your browser.

4 Get Started

IDERA SQL Workload Analysis provides a granular breakdown of SQL Server wait states with easy drill-down to isolate problems quickly. It delivers valuable real-time and historical data to help tune queries as well as actionable recommendations to improve performance.

Use the following checklist to get started using SQL Workload Analysis.

✓	**Follow these steps ...**
	Run the Setup.exe file from the root folder of the installation kit to install the IDERA Dashboard and SQL Workload Analysis
	Log in the IDERA Dashboard.
	Add instances for monitoring.
	If you want to grant other users access to the IDERA Dashboard or SQL Workload Analysis, manage users in the Administration view.
	Get a complete overview of your environment in the SQL Workload Analysis dashboard.

4.1 Installation and deployment

You can install and deploy SQL Workload Analysis in any environment size. SQL Workload Analysis integrates seamlessly with the IDERA Dashboard, a common technology framework designed to support multiple IDERA products.

- Learn about the product components and architecture.
- Review the hardware, software, and permissions requirements.
- View installation instructions for the IDERA Dashboard and SQL Workload Analysis.

4.1.1 IDERA Dashboard product components and architecture

The IDERA Dashboard provides web and back end services, shared across multiple IDERA products. To learn more about what the IDERA Dashboard is and how it works, see IDERA Dashboard.

The IDERA Dashboard consists of the following components:

- Web Application Service
- Core Service
- Core Repository

Web Application Service

The Web Application Service is a Windows service that wraps Apache Tomcat server. The Web Application Service serves up IDERA Dashboard and SQL Workload Analysis views and widgets that are displayed in the web console. The Web Application Service requires two ports:

- Standard HTTP port (by default 9290)
- SSL port (9291)

Core Service

The Core Service is a C# (.NET 4.0 Framework) based Windows service that hosts dashboard and SQL Workload Analysis REST APIs that are used by the Web Application Service to configure and retrieve data. In addition, the Core Service handles product registration, security, configuration, product data, and event aggregation.

The Core Service uses two ports, one for REST API and the other for .NET remoting:

- Core Service REST API port (by default 9292)
- .NET remoting port (by default 9293)

Core Repository

The Core Repository is a database where all dashboard configuration and aggregated data is stored. The Core Repository database is hosted on a SQL Server instance and is accessed by the Core Service to retrieve data.

4.1.2 SQL Workload Analysis product components and architecture

SQL Workload Analysis consist of a light, unobtrusive architecture that easily runs in your SQL Server environment with minimal configuration. All components run outside and separate from SQL Server processes.

4.1.3 SQL Workload recommended server sizing guidelines

The following guidelines provide an estimation of the hardware resources required to deploy SQL Workload Analysis depending on the number of servers you want to monitor.

⚠ The requirements detailed in this page, are also applied when setting up a VM for SQL Workload Analysis.

Installs under 15 monitored instances

Type	Requirement
CPU Cores	2 - 4
Memory	4 - 10 GB
Disk Space	Approximately 3 - 5 GB per monitored instance

Installs 15-45 monitored instances

Type	Requirement
CPU Cores	4 - 8
Memory	10 - 32 GB
Disk Space	Approximately 3 - 5 GB per monitored instance

ⓘ Remember that when the number of SQL instances to be Monitored is more than 15, the minimum requirement is 16GB RAM and 4 CPU core processors.

4.1.4 Software requirements

IDERA Dashboard services requirements

You need to comply with the following requirements to install the IDERA Dashboard services:

Type	Requirement	Recommendations
Microsoft. NET Framework version	4.5 or later	Make sure to install this software before the installation of the IDERA Dashboard. For more information about the .NET Framework, see the MSDN article. .NET Framework versions and dependencies.
Operating System (64-bit)	• Windows Server 2012 • Windows Server 2016 • Windows Server 2019 • Windows 10	
Other requirements	MDAC 2.8	

IDERA Dashboard repository requirements

The IDERA Dashboard supports any of the following versions for hosting its repositories:

Type	Requirement
SQL Server Express, Standard, or Enterprise Edition	• SQL Server 2016 • SQL Server 2017 • SQL Server 2019 • SQL Server 2022

Monitored SQL Workload Analysis instance requirements

All SQL Server instances that you want to monitor should comply with the following requirements:

Type	Requirement
SQL Server Express, Standard, or Enterprise Edition	• SQL Server 2016 • SQL Server 2017 • SQL Server 2019 • SQL Server 2022

Web browser requirements

The IDERA Dashboard and SQL Workload Analysis web consoles are compatible with the following browsers:

- Microsoft Edge
- Google Chrome
- Mozilla Firefox

Port requirements

- Web Application Service: **9290** (Standard HTTP port) and **9291** (SSL port)
- Core Service: **9292** (REST API port) and **9293** (.NET remoting port)
- Idera Framework: **20700** (Tomcat GUI port) and **20705** (ActiveMQ port)
- Idera SQLDB: **1433** (SQL port)

4.1.5 Required accounts and permissions

SQL Workload Analysis uses the same types of authentication available in the SQL Server security model. When specifying account credentials for SQL Workload Analysis, you can use Windows Authentication or SQL Server Authentication.

When considering which authentication to use, keep in mind that SQL Server Authentication is required when no domain trust exists between the SQL Workload Analysis computer and the computers hosting the monitored SQL Server instances. For example, if the monitored SQL Server instances are located in an untrusted domain or behind a firewall, you must use SQL Server Authentication to successfully deploy SQL Workload Analysis. In this case, you must use the 'sa' account or a SQL Server login that has System Administrator permissions.

For more information about these authentication types and the SQL Server security model, see the Microsoft document, Authentication in SQL Server.

> **Note**
>
> When using Windows Authentication credentials, keep in mind that the account has to be added as an individual account with 'System Administrator' privileges. Even if the group it is part of is already listed in SSMS.

4.1.6 Installation instructions

This procedure guides you through a typical install of SQL Workload Analysis integrated with the IDERA Dashboard.

- The SQL Workload Analysis installation kit provides users with a unified installer for both products: IDERA Dashboard and SQLWA.
- IDERA recommends running the unified installer. See Install the IDERA Dashboard and SQL Workload Analysis for detailed instructions.

Installation prerequisites

- The user must have a local administrator account.
- Microsoft .NET Framework 4.0 or later must be installed prior to beginning installation.

Install the IDERA Dashboard & SQL Workload Analysis

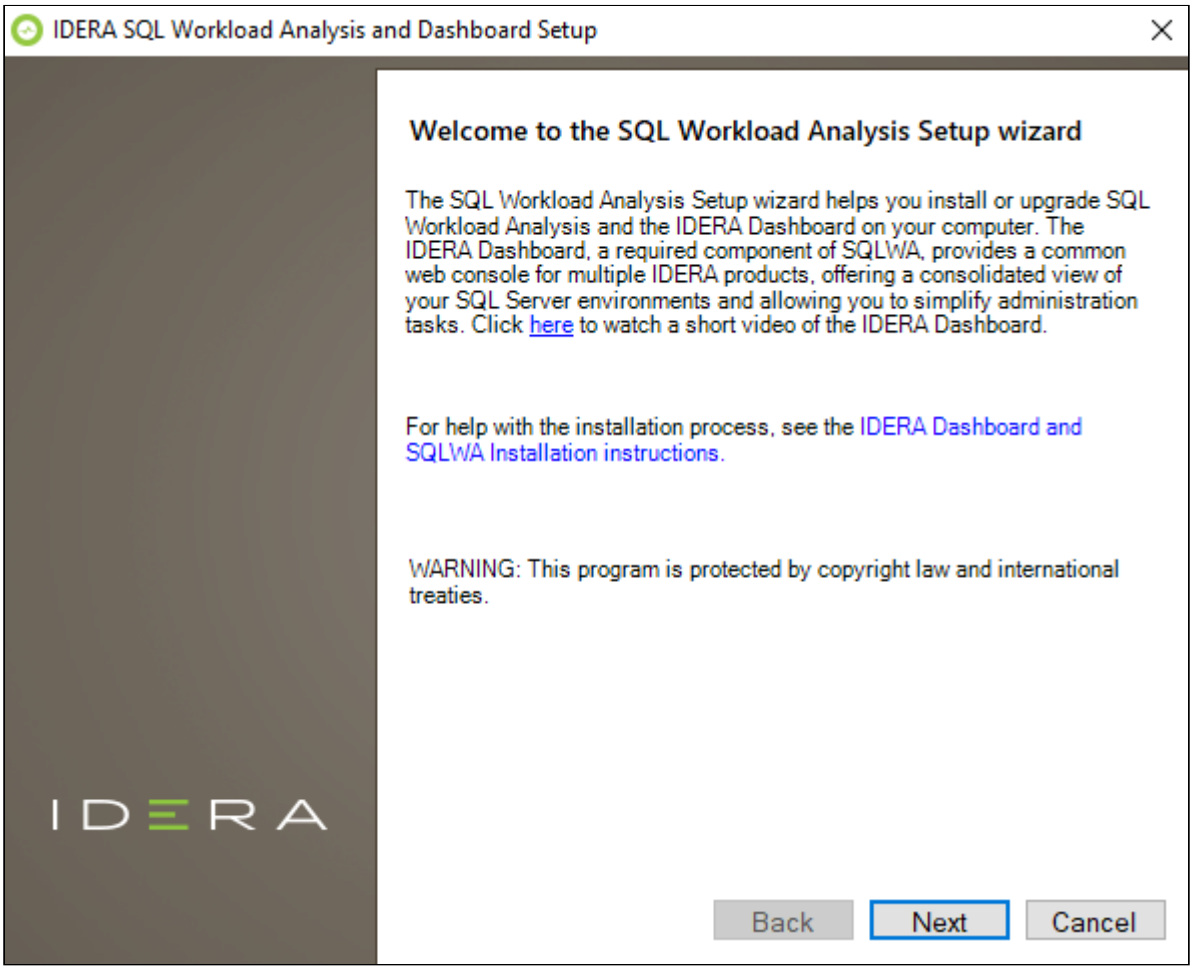
This procedure guides you through the installation of the IDERA Dashboard and SQL Workload Analysis.

Start your IDERA SQL Workload Analysis installation

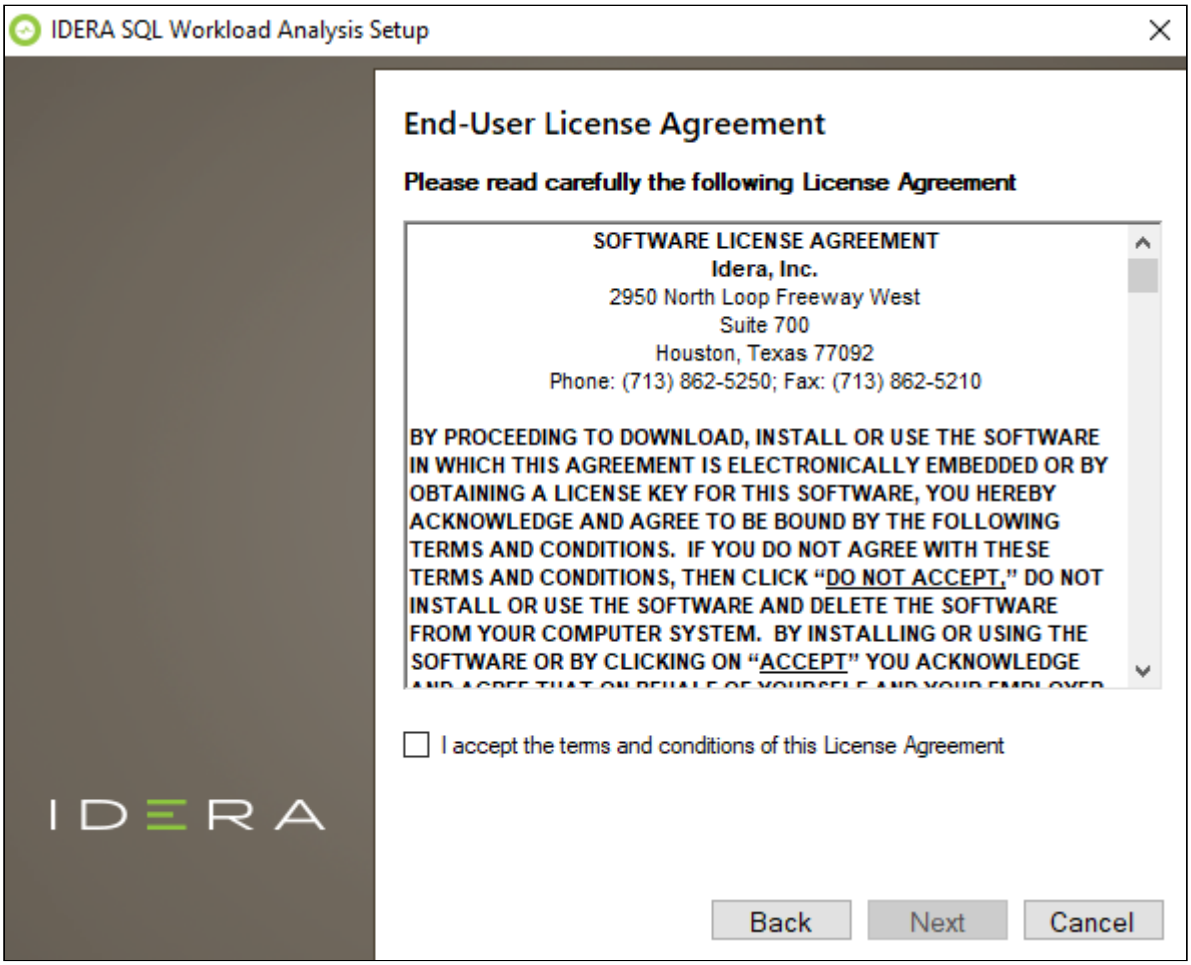
You can install the IDERA Dashboard and SQL Workload Analysis on any computer that meets or exceeds the product requirements.

To start installing the IDERA Dashboard and SQL Workload Analysis:

1. Log on with an administrator account to the computer on which you want to install SQL Workload Analysis.
2. Run Setup.exe in the root of the installation kit.
3. Click **Next** on the **Welcome** window of the setup program.

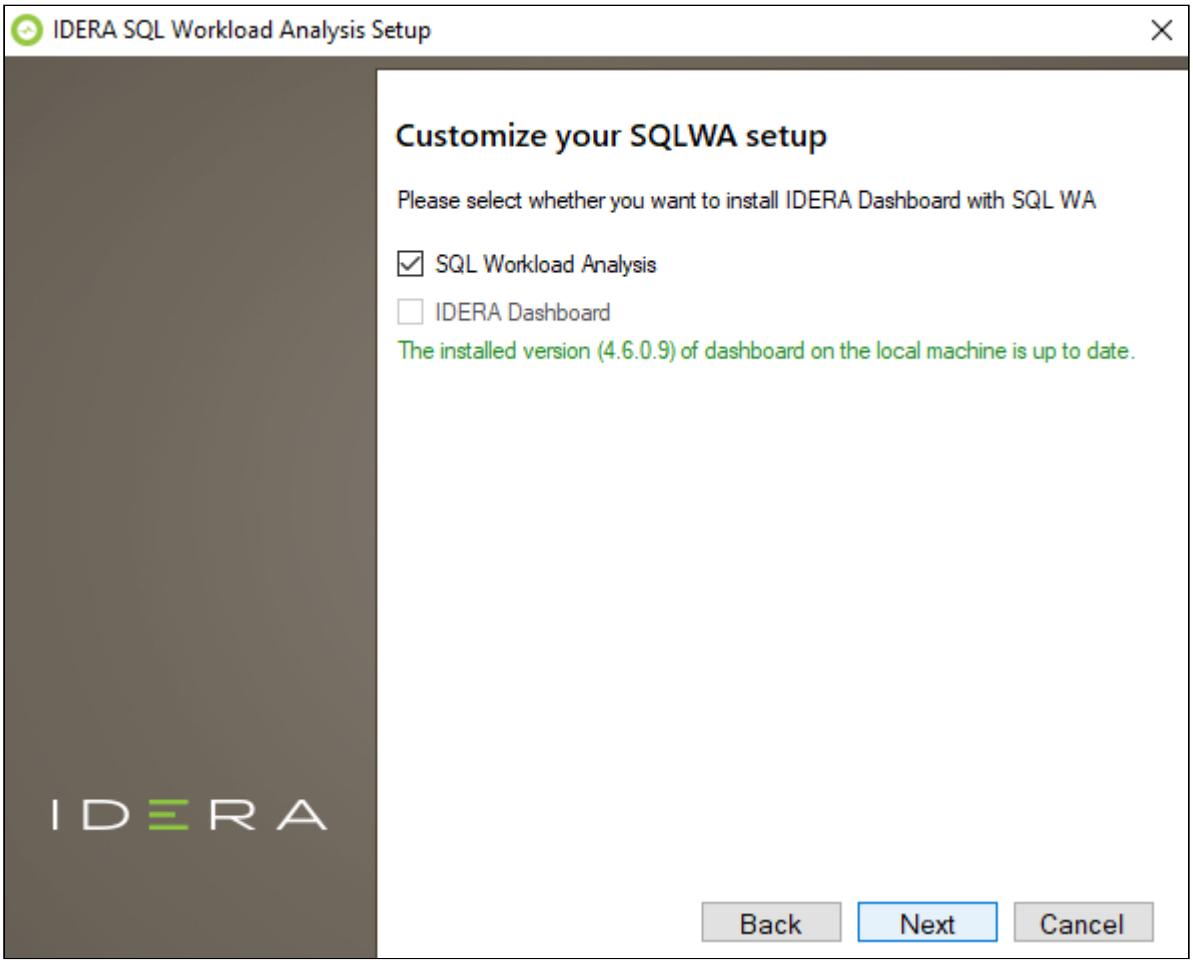


4. Review the license agreement. To accept this license agreement, click **I accept the terms and conditions of this License Agreement**, and then click **Next**.



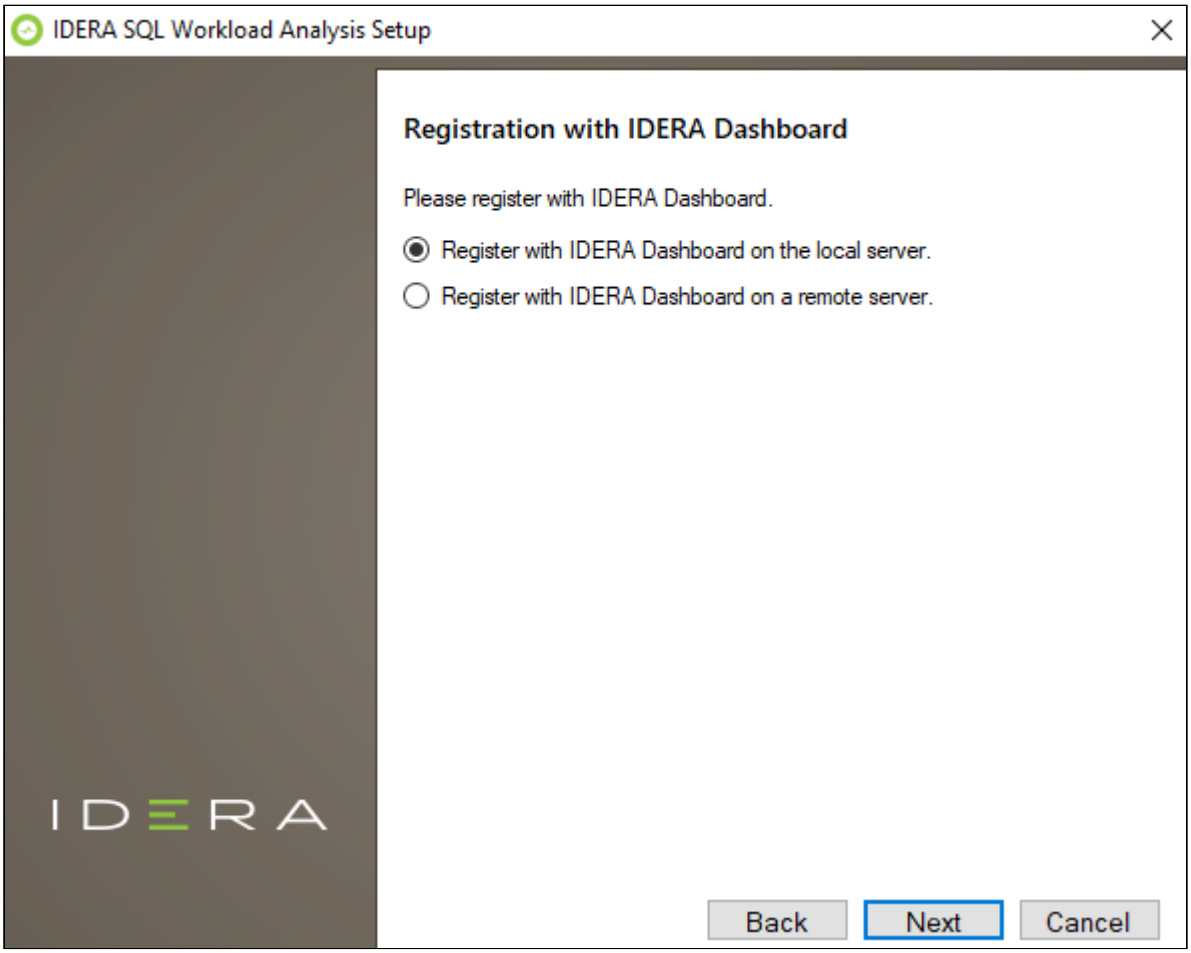
Select Products to install

By default both products (IDERA Dashboard & SQL Workload Analysis) are selected to be installed. You can choose to install only the IDERA Dashboard or only SQL Workload Analysis.



Select a registration option to install your IDERA Dashboard

You can select to install or upgrade your IDERA Dashboard on your local machine or on a remote server. If you have previously installed the IDERA Dashboard, provide the URL and the administrator credentials, and click **Next**.



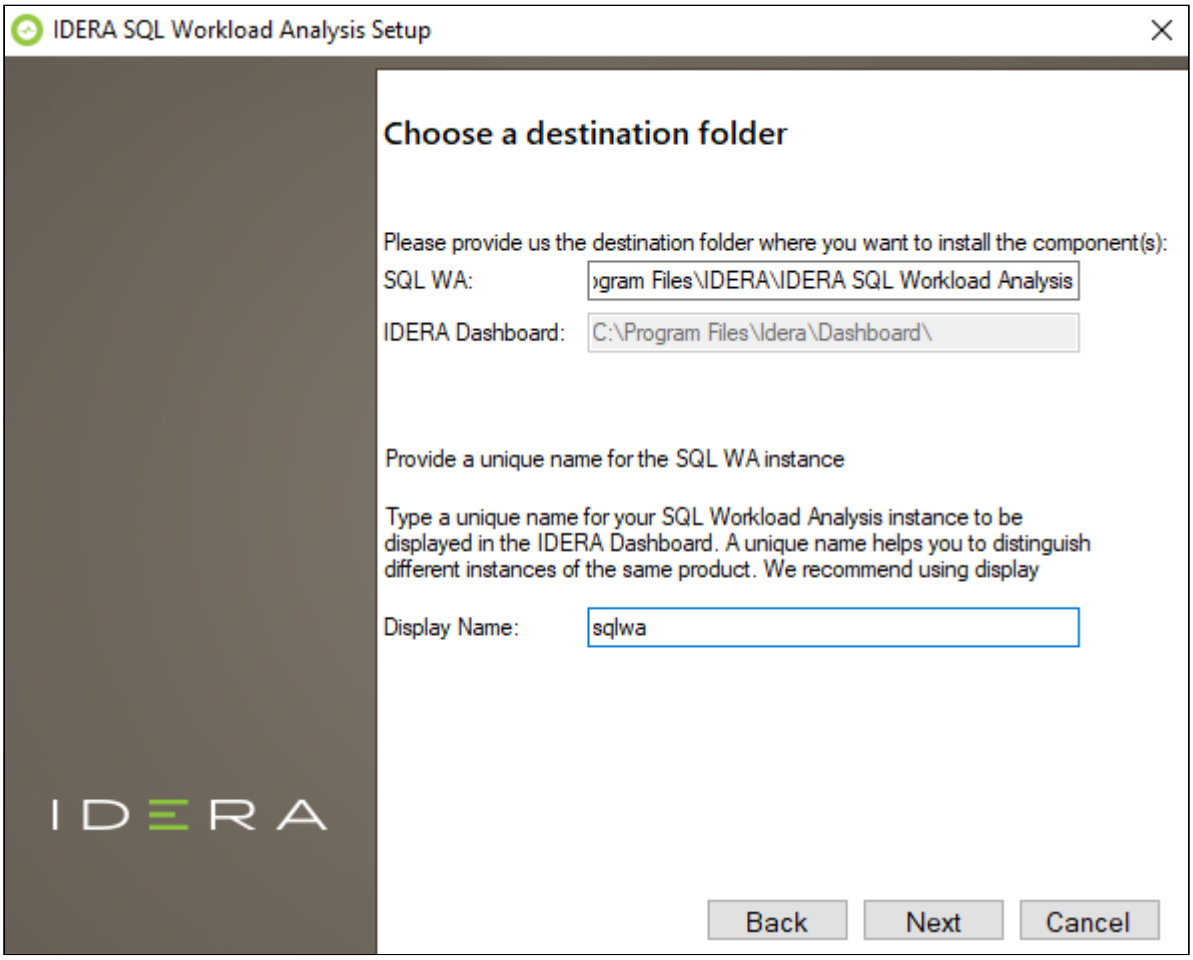
Select an installation location and type a display name for your instance

You can use the default install location or specify a different path. For your first install, we recommend using the default location for SQLWA and the IDERA Dashboard.

On the Display Name text box, type a unique name for your SQLWA instance, and click **Next** to continue with the installation.

Display name

The display name helps you to distinguish different instances of the same product.

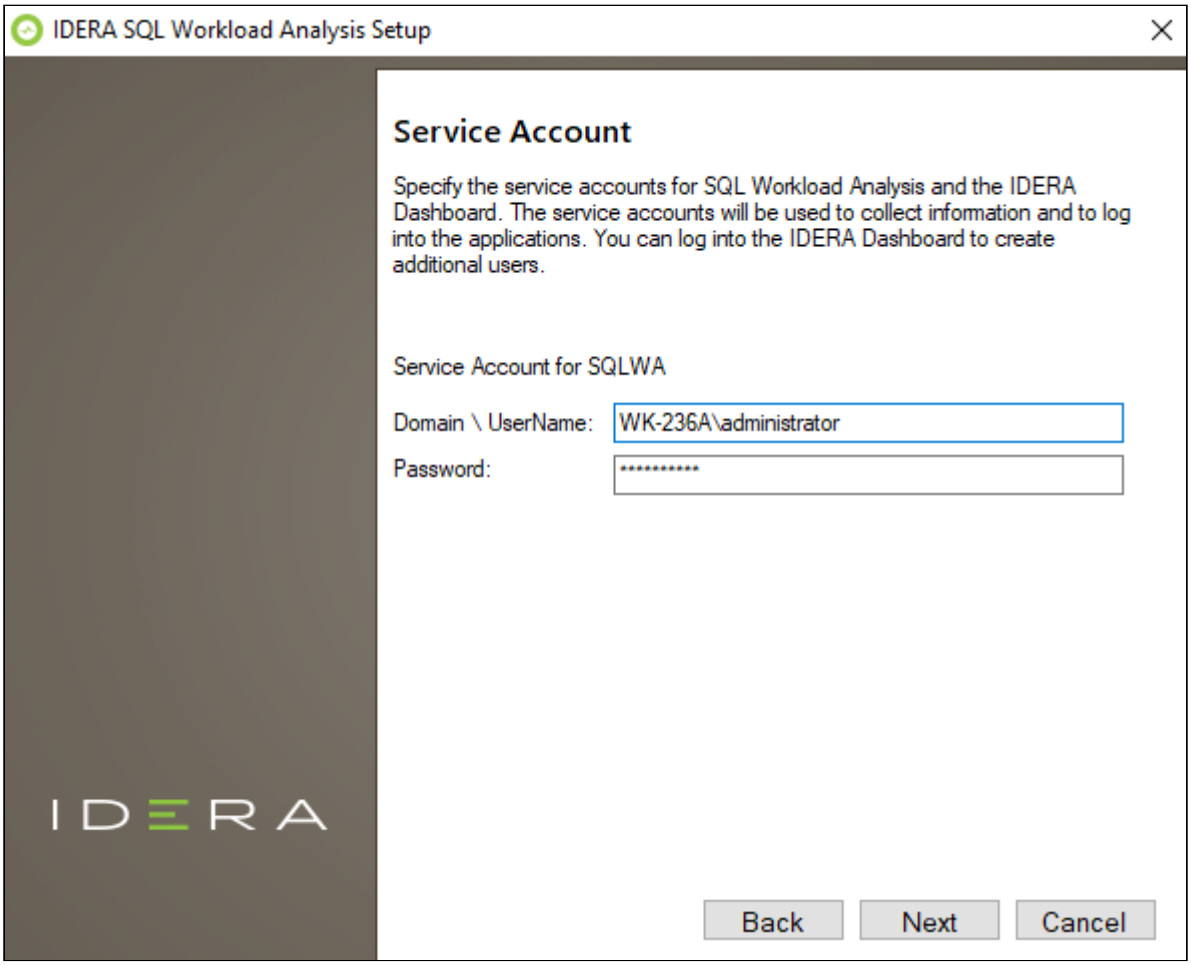


Select a Windows user account to use for the service account

SQL Workload Analysis uses the service account to communicate with the monitored SQL Server. The IDERA Dashboard uses this account to connect, discover, and gather configuration information from SQL Servers in your environment. The installer grants the "Log on as a Service" right to the account that you specify, you can also choose to use different Windows credentials for each of the products.

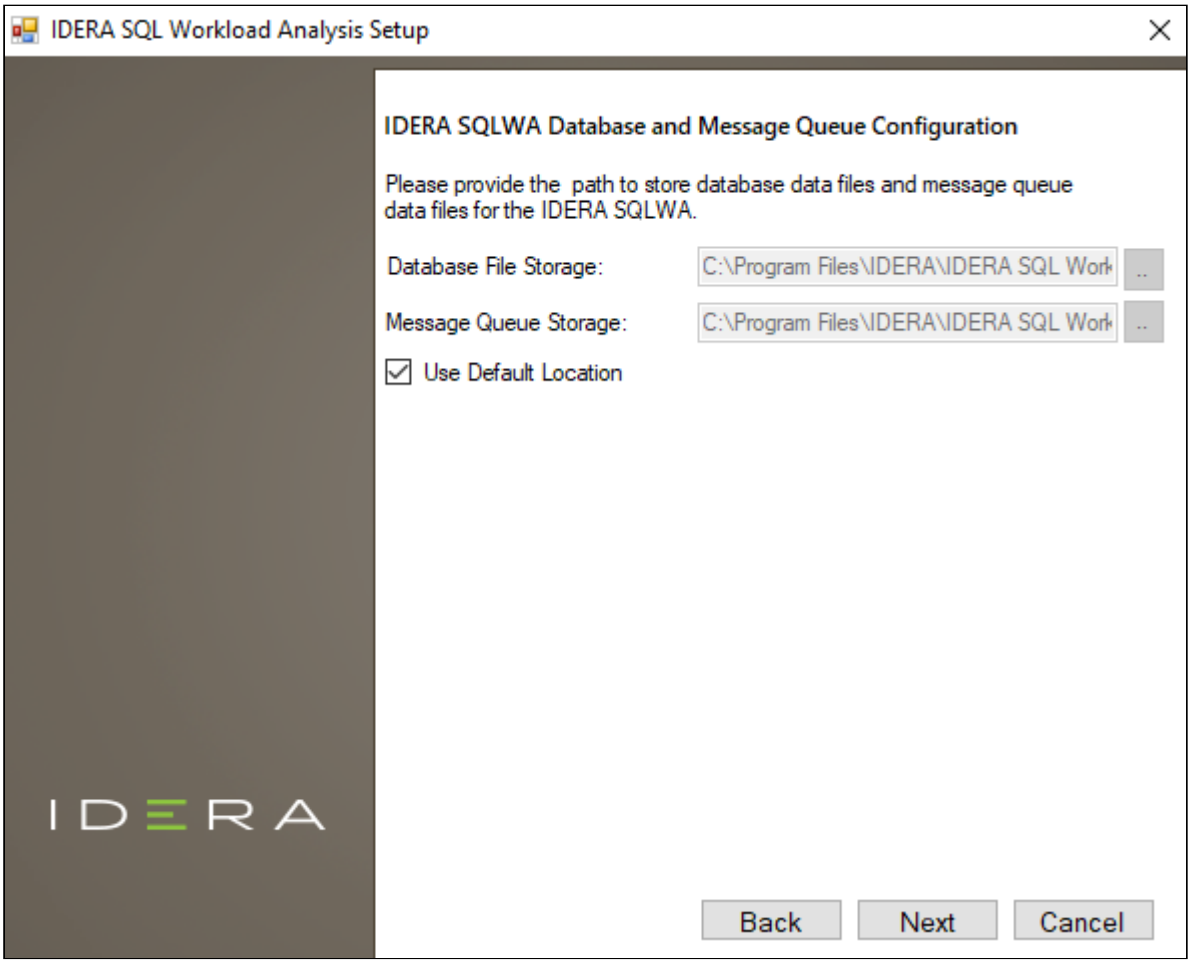
To specify a service account:

1. On the Service Account window, type appropriate credentials in the provided fields under which the services run.
2. Click **Next**. SQL Workload Analysis verifies the connection before continuing.



IDERA SQLWA Database and Message Queue configuration

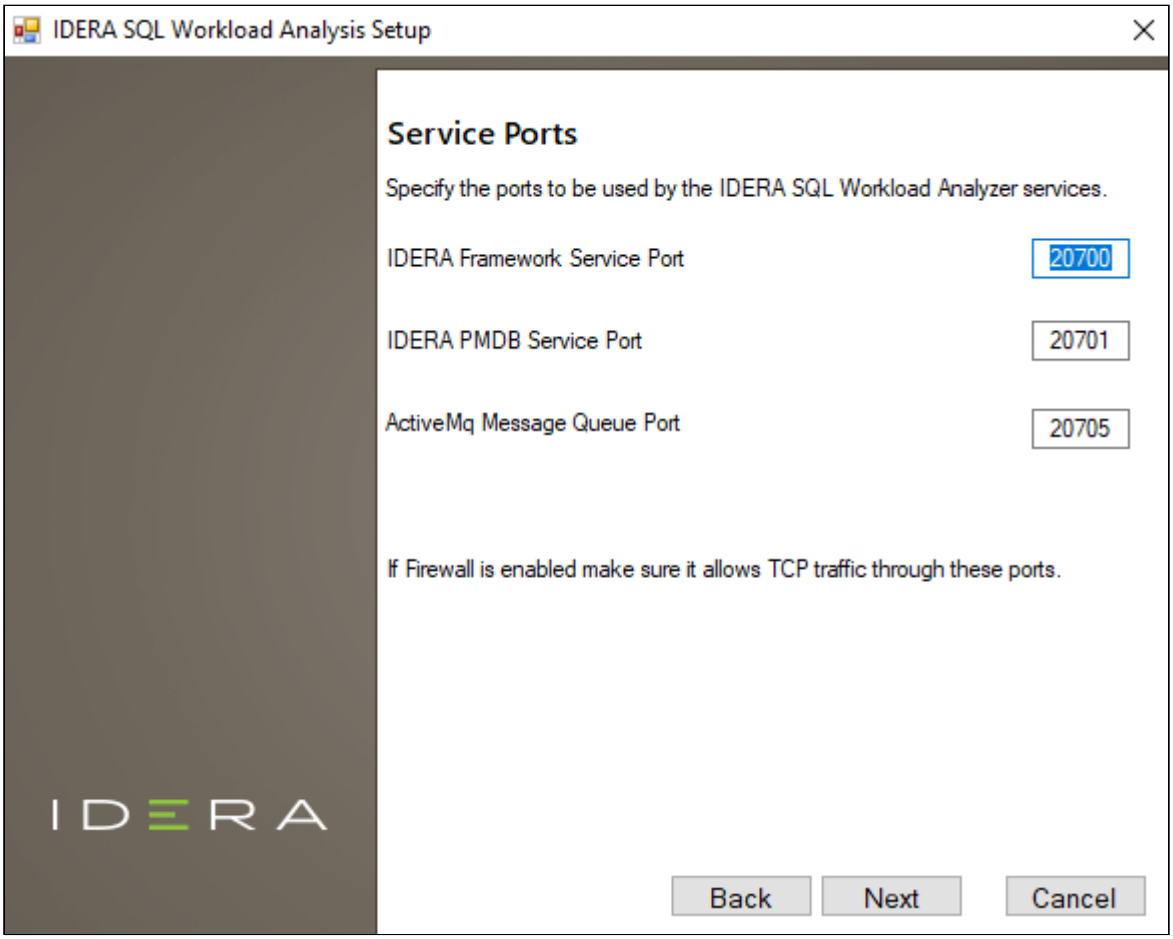
To change the storage paths for the Database File and the Message Queue, first uncheck the Default Location, and enter the new storage paths.



Service Ports

The SQL Workload Analyzer services uses the following ports:

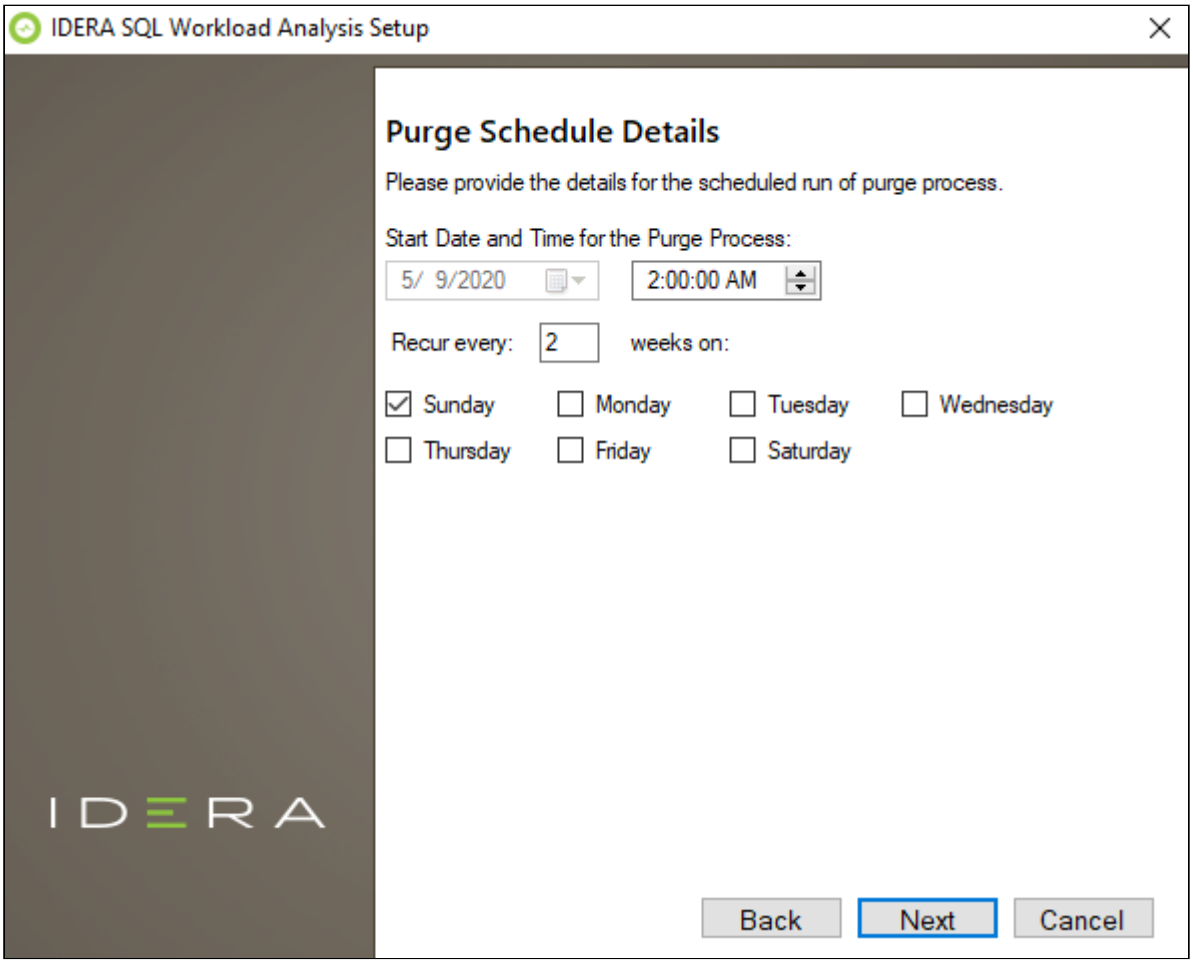
- IDERA Framework Service Port: **20700**
- IDERA PMDB Service Port: **20701**
- ActiveMq Message Queue Port: **20705**



Verify that the Firewall allows TCP (Transmission Control Protocol) traffic through your specified ports.

Purge Schedule Details

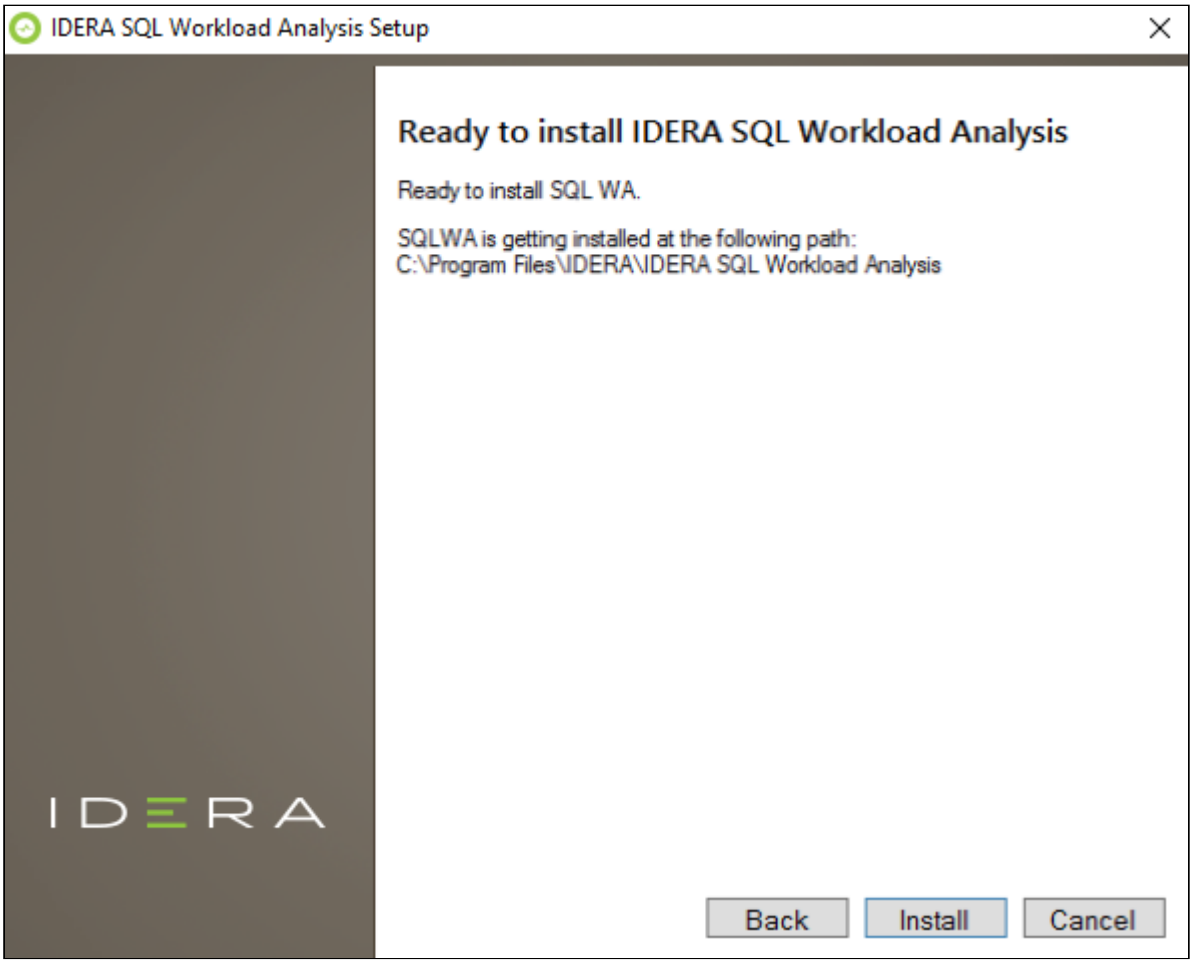
Configure the schedule to run the purge process in SQL Workload Analysis. The Purge Schedule Details is set at 2:00 AM, every 2 weeks, on Sunday, by default.



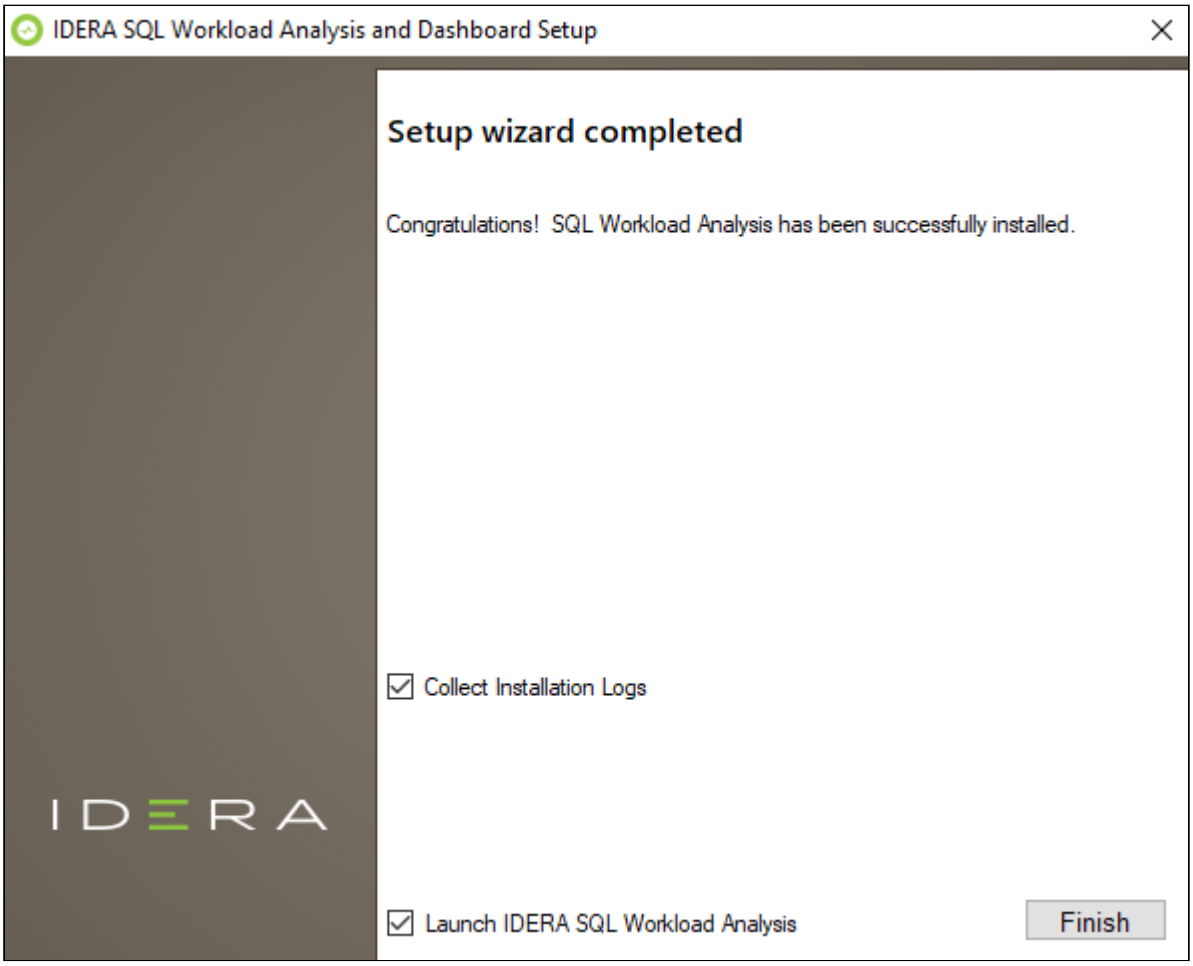
The purge process does not affect historical data that is visible to users. It is a cleanup utility to improve stability.

Complete the install

The setup will grant the provided accounts access to SQL Workload Analysis and the IDERA Dashboard. The user that installs the IDERA Dashboard has access to this application by default as a Dashboard Administrator. You can choose whether you want other users to have access to the IDERA Dashboard in the Administration view. Click **Install** to indicate that you are ready to complete your installation with the configurations you specified. If you want to review or change any of your settings, click **Back**.



To complete the SQL Workload Analysis, click **Finish** to exit the IDERA Dashboard Setup Wizard.



To access the IDERA Dashboard and the SQL Workload Analysis web console, see Log in the IDERA Dashboard and web console.

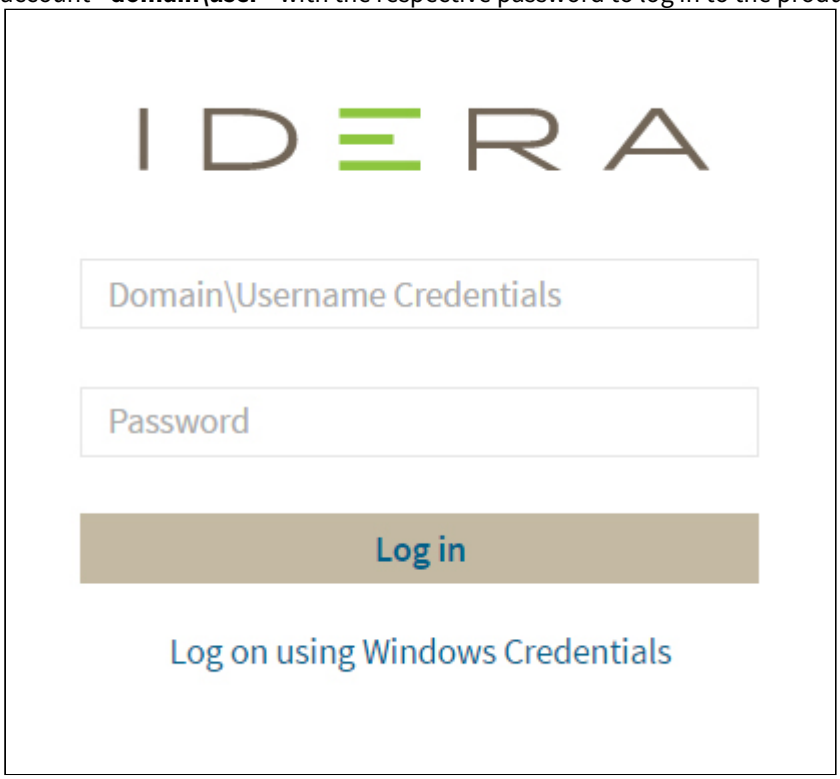
Uninstalling the IDERA Dashboard

If you wish to uninstall the IDERA Dashboard, make sure to unregister all products by clicking the **Manage Products** link of the Products widget in the Administration view. For additional information, see Managing products in the IDERA Dashboard.

4.2 Log in to the IDERA Dashboard

Once you have installed and configured your IDERA Dashboard and SQL Workload Analysis deployments, you can log in to the web console by doing the following:

1. Open your selected Browser. Make sure it is compatible with the IDERA Dashboard console requirements.
2. Type the IDERA Dashboard product URL: **http://<machinename>:<port>** where **<machinename>** is the name of your host or machine, and **<port>** is the port specified during installation. The default URL is **http://<localhost>:9290** or **http://<machinename>:9290**.
3. When the IDERA Dashboard web console launches on your browser, use your Windows user account **<domain\user>** with the respective password to log in to the product.



5 The SQL Workload Analysis Dashboard

The left column displays a list of the monitored instances, allowing you to identify their status using specific icons for each possible status. Below is a description of each status:

	Instance is active and there is data collected in the last 2 minutes
	Instance is inactive or unreachable
	Instance has been removed
	Unknown. No data collected in the last 2 minutes
	Stopped

You can launch the SQL Diagnostic Manager Web console for instances that are also registered in SQL Diagnostic Manager by clicking the icon .

All the information displayed in the SWA Home tab is measured in seconds.

You can select a time frame from the available options located in the top right corner of the screen.

The following time frames are available for SQL Workload Analysis to retrieve information:

- 15 minutes
- 1 hour
- 4 hours
- 1 day
- 5 days
- 4 weeks

Click the icon for help. This icon opens the SQL Workload Analysis wiki.

5.1 SQL Workload Analysis Dashboard

The SQL Workload Analysis Dashboard lists the top monitored instances. When you select one of the monitored instances, SQL WA displays the following information:

- Total in DB Highlights
- Total in DB Trending
- Top Databases
- Page Faults/sec
- Top SQL Stored Procedures
- Top SQL Statements
- Top Logins
- Top Machines
- Top Programs

5.2 Total in DB Highlights

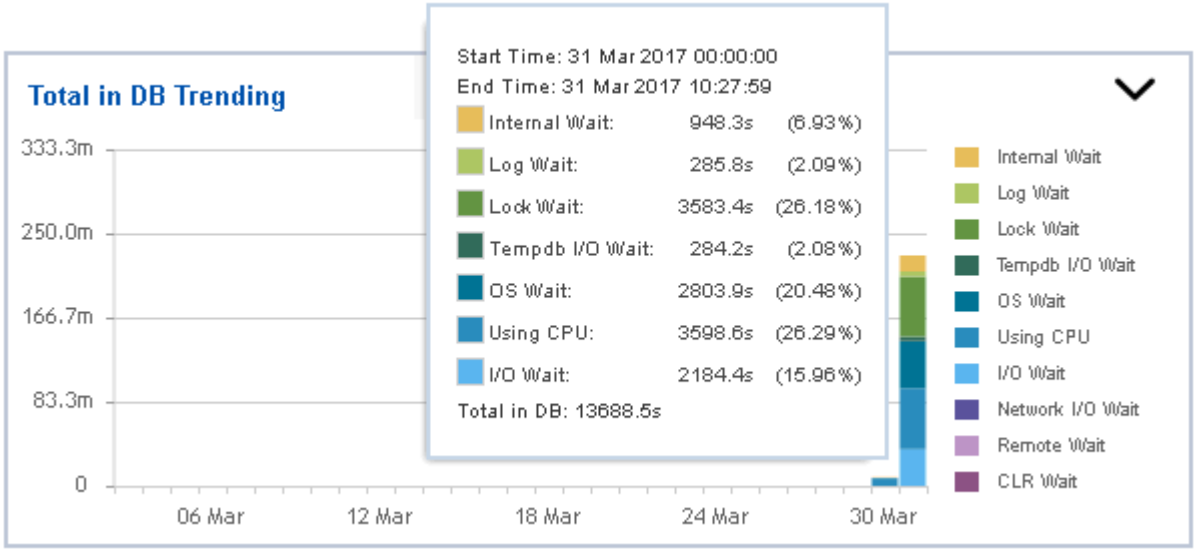
The Total in DB Highlights chart shows a general overview of the following metrics:

- **Internal Wait** - Analyze statements experiencing internal waits.
- **I/O Wait** - Analyze disks and storage devices experiencing high I/O waits.
- **Lock Wait** - Analyze current and historical locks.
- **Using CPU** - Analyze statements with high CPU consumption.
- **OS Wait** - Analyze statements experiencing OS waits.
- **Tempdb I/O Wait** - Analyze statements experiencing I/O waits on tempdb.
- **Network I/O Wait** - Analyze statements experiencing network waits.
- **Log Wait** - Analyze statements experiencing log waits.
- **Remote Wait** - Analyze statements experiencing waits for remote instances.

5.3 Total in DB Trending

The Total in DB Trending graph displays information measured in seconds about Internal Wait, Log Wait, Lock Wait, Tempdb I/O Wait, OS Wait, Using CPU, I/O Wait, Network I/O Wait, Remote Wait, and CLR Wait. All Waits are color-coded and they are related to the Total in DB Highlights graph.

You can drill down into different time intervals, click and drag the rectangle over the graph.



5.4 Top Databases

The Top Databases lists the databases that have been more frequently used or accessed. The list includes numeric and graphic information about the time spent executing queries and updates on each of the databases in the list.

When you click one of the listed databases, SQL Workload Analysis redirects you to the Database page.

On the left side of the Database screen, you find the list of Databases registered in the monitored server followed by the Total in DB value. This list helps you to have a faster access to other databases.

5.4.1 Top Tables

The Top Table chart, lists the table names followed by the Wait Time, the number of Operations, the used Space, and the Database name to where they belong.

Click a table name to obtain detailed information and to drill down into the table page.

5.5 Page Faults/sec

SQL Workload Analysis displays the number of page faults per second as seen by the SQL Server process; as well as, the server machine instance corresponding to the specific monitored instance.

The Page Faults/sec graph shows a contrast between the SQL Server Page Faults/sec and the Server page Faults/sec, drill-down the graph for a detailed view of a specific time or a specific range of time.

5.6 Top SQL Stored Procedures or Batches

The Top SQL Stored Procedures table lists all the SQL Stored procedures, their Total in DB data, the number of Executions, and the Database name.

Click one of the listed SQL Stored Procedures or Batches to drill down to the Statement page filtered by the selected procedure or batch.

5.7 Top SQL Statements

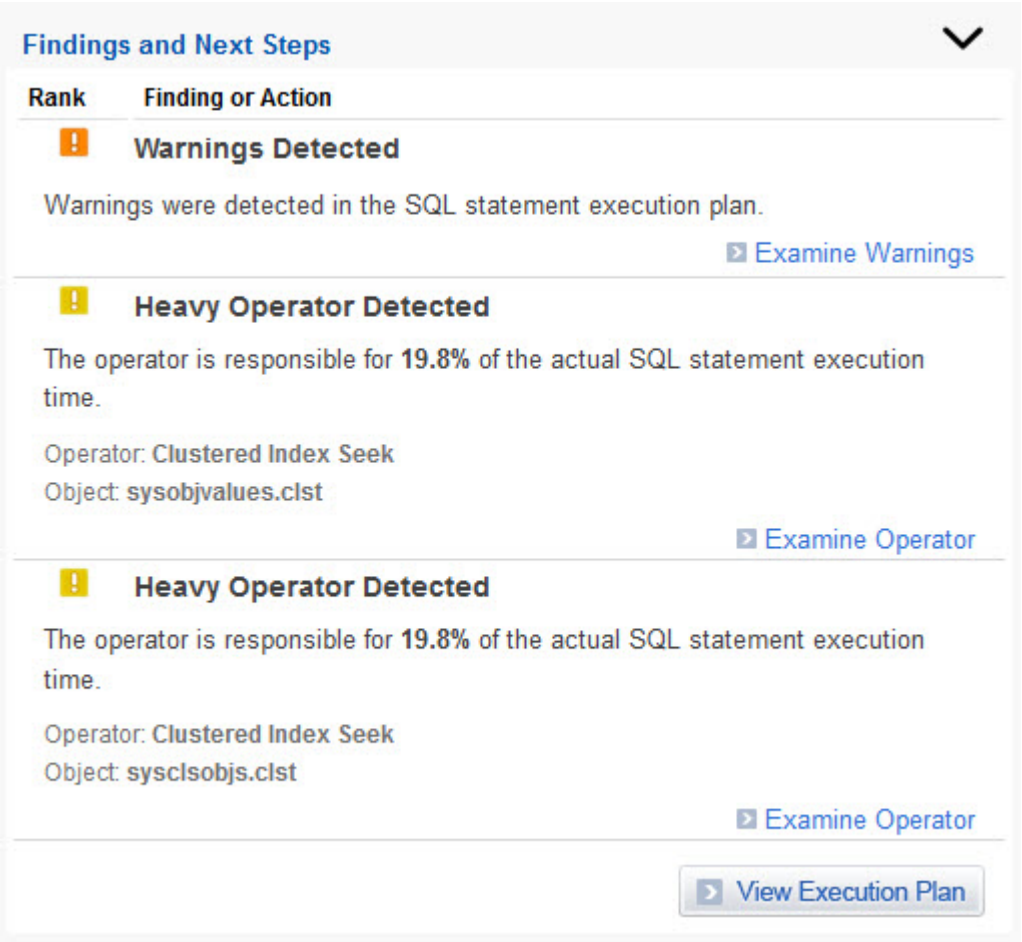
Displays a list of the most frequently executed SQL statements, including queries, and updates that have been performed on a specific monitored instance and/or a specific database.

When you drill down into any of the Statements, SQL Workload Analysis redirects you to the statement page where you can finds more detailed query information, these details helps you to identify the heaviest operators per query and the percentage of the execution time of these operators.

The Top SQL Statements page displays the performance summary; which includes the Procedure/Batch information, any Findings and Next Steps, the SQL Statement full text, the trends of the waits, the Top Accesses Objects, and the Top Machines.

5.7.1 Finding and next steps

The Findings and Next steps box describes each finding or action detected in the selected SQL Statement; such as the heaviest operators. It displays the severity under the Rank columns, and shows the Operator and Object name.



You can perform the following actions in the Findings and Next Steps box:

- Click **Examine** button to obtain detailed information on the selected Finding or Action.
- Click the **View Execution Plan** option to review the Execution Plan. In this option you can find a detailed information about specific components and the efficiency related to the findings. Also, it displays the SQL Statement Full Text.

5.8 Top Logins

Provides a list of logins executed in the monitored instances. This information identifies where the user was accessing the system from and other SQL statements. The list also defines the type of user, the total workload in the DB (measured in seconds), and the number of executions.

Click any of the listed Logins to obtain more information on the selected Login. SQL Workload Analysis redirects you to the Login page where it shows the top waits and their trends, the top databases, the top SQL statements, the top machines, and the top programs. On the left side of the screen, you find the list of Logins to help you a faster access to any other Login that you need.

5.9 Top Machines

Displays a list of machine instances that frequently connect to a specific monitored instance and/or a specific database.

When you click any of the listed machines, SQL Workload Analysis redirects you to the Machines page.

5.10 Top Programs

Provides a list of client application programs that most frequently connect to a specific monitored instance and/or a specific database.

The Top Programs box shows the list of Programs and the Total in DB.

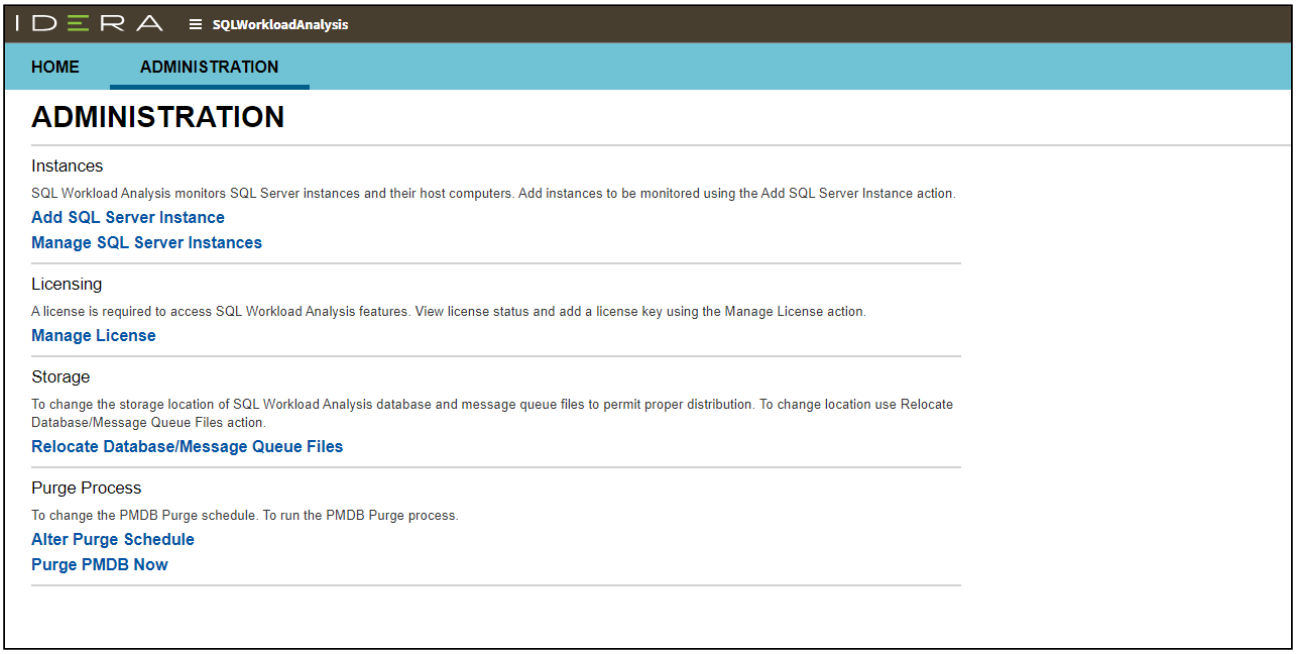
When you click any of the listed programs, SQL Workload Analysis redirects you to the Top Program page.

For a selected program, SQL Workload Analysis shows the top wait, the top databases, the top SQL Statements, the top logins, and the top machines.

6 Administering SQL Workload Analysis

The SQL Workload Analysis Administration tab displays hosts different widgets to perform some administration-related actions:

- Add SQL Server Instance
- Manage SQL Server Instances
- Manage License
- Relocate Database/Message Queue Files
- Alter Purge Schedule
- Purge PMDB Now



6.1 Register Instances for monitoring

In order to monitor an instance with SQL Workload Analysis, you need to register it with SQL Workload Analysis. This section helps you register one or more instances with SQL Workload Analysis.

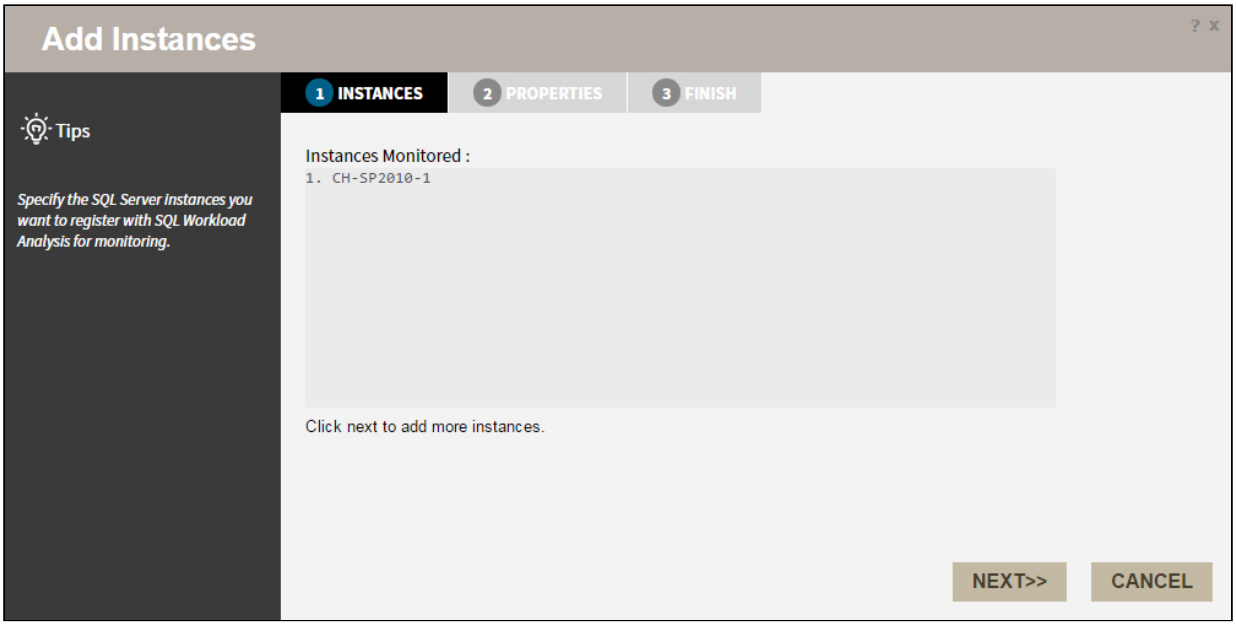
6.1.1 Access the Add Instance Wizard

You can access the **Add Instance** wizard from the **Add SQL Server Instance** option in the Administration tab.

To add an Instance follow these steps:

1. Instances

The **Instances** tab displays a list of the instances currently monitored by SQL Workload Analysis.

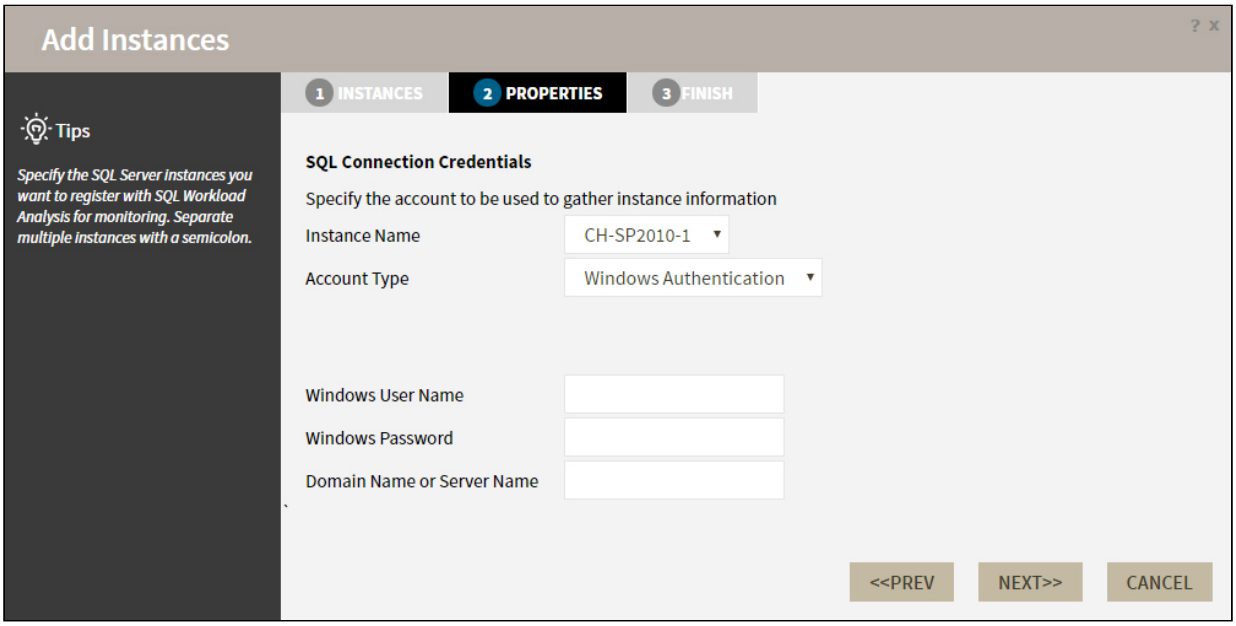


Click **NEXT** to add a new instance for monitoring.

2. Specify the Instance name and the connection credentials

Enter the **Instance name** or choose an instance from the list of instances already registered in the IDERA Dashboard. Choose if you want to use **SQL Server Authentication** or **Windows Authentication** from the **Account Type** list.

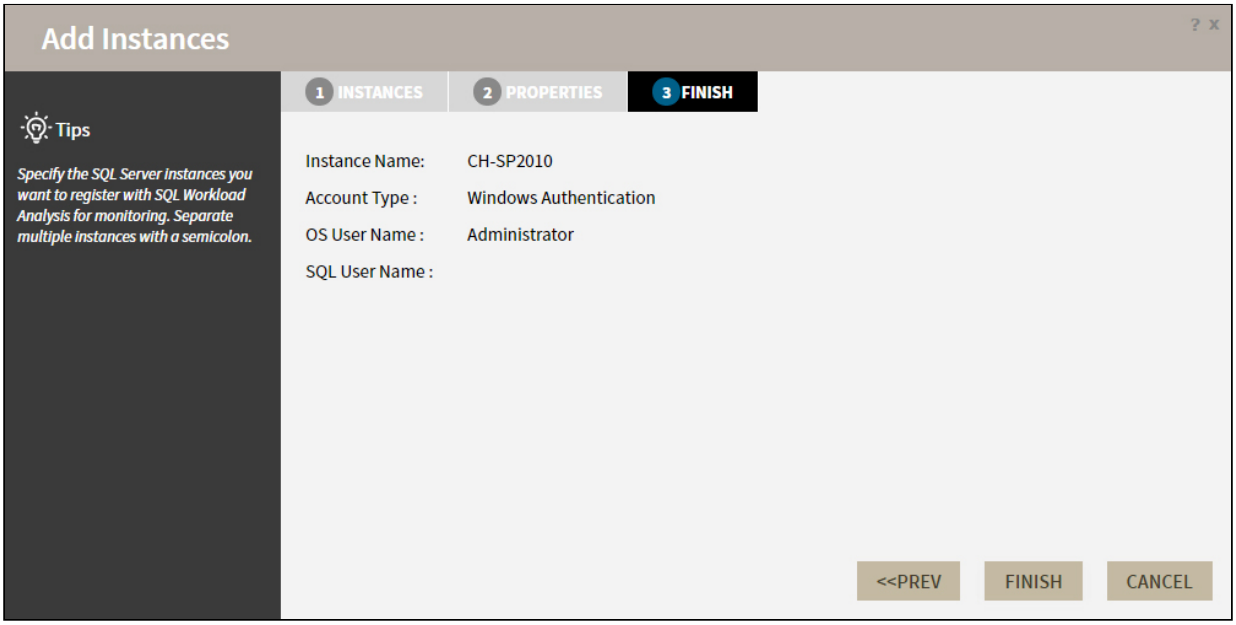
If you choose SQL Server Authentication, select **Enable OS Statistics Collection** to retrieve OS Statistics information, type the user name and password. If you choose to use **Windows Authentication** , type the respective user name, password, and domain name.



For more information on the minimum required permissions, see Required accounts and permissions.

3. Finish

On this section, you can review your Instance Registration Details such as: Instance Name, Account Type, and User Name.

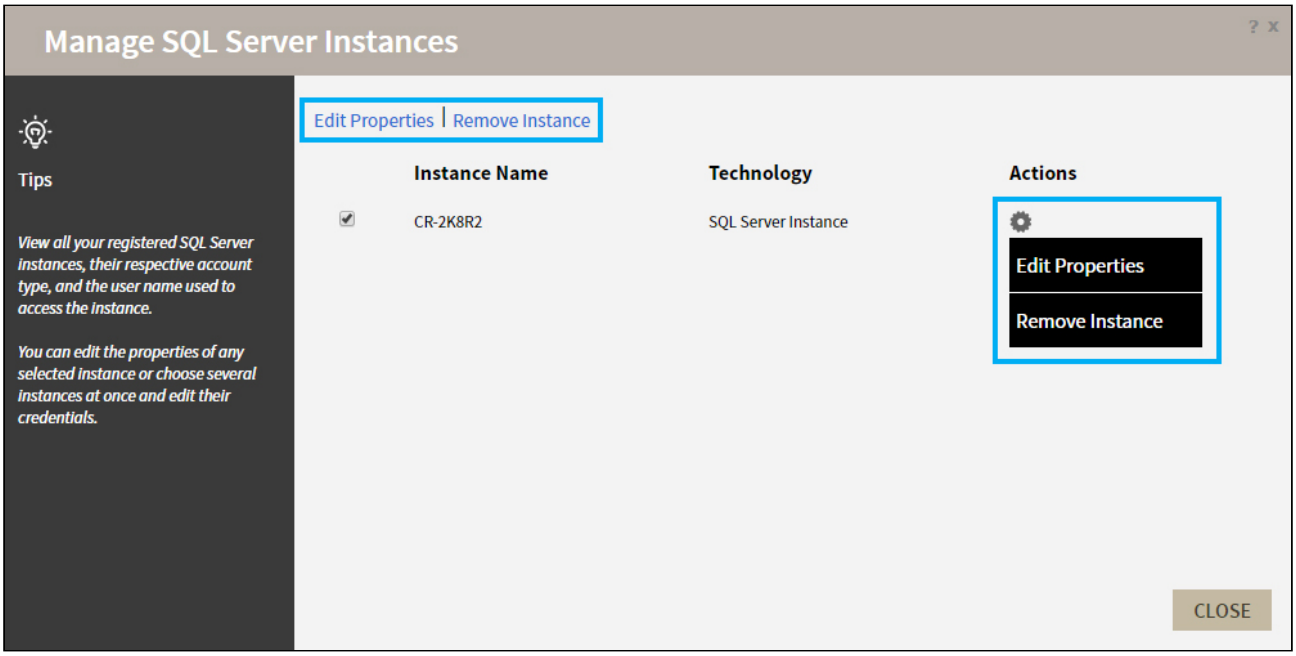


To change registration details you can click **PREV** to go back to previous screens until you find the one you need to modify.

After you review your registration details click **FINISH.**

6.2 Manage registered Instances

You can manage the instances registered and monitored by SQL Workload Analysis from the **Manage SQL Server Instances** option in the **Administration** tab.



The options available are:

Edit Properties

Allows you to modify the account credentials of a registered instance.

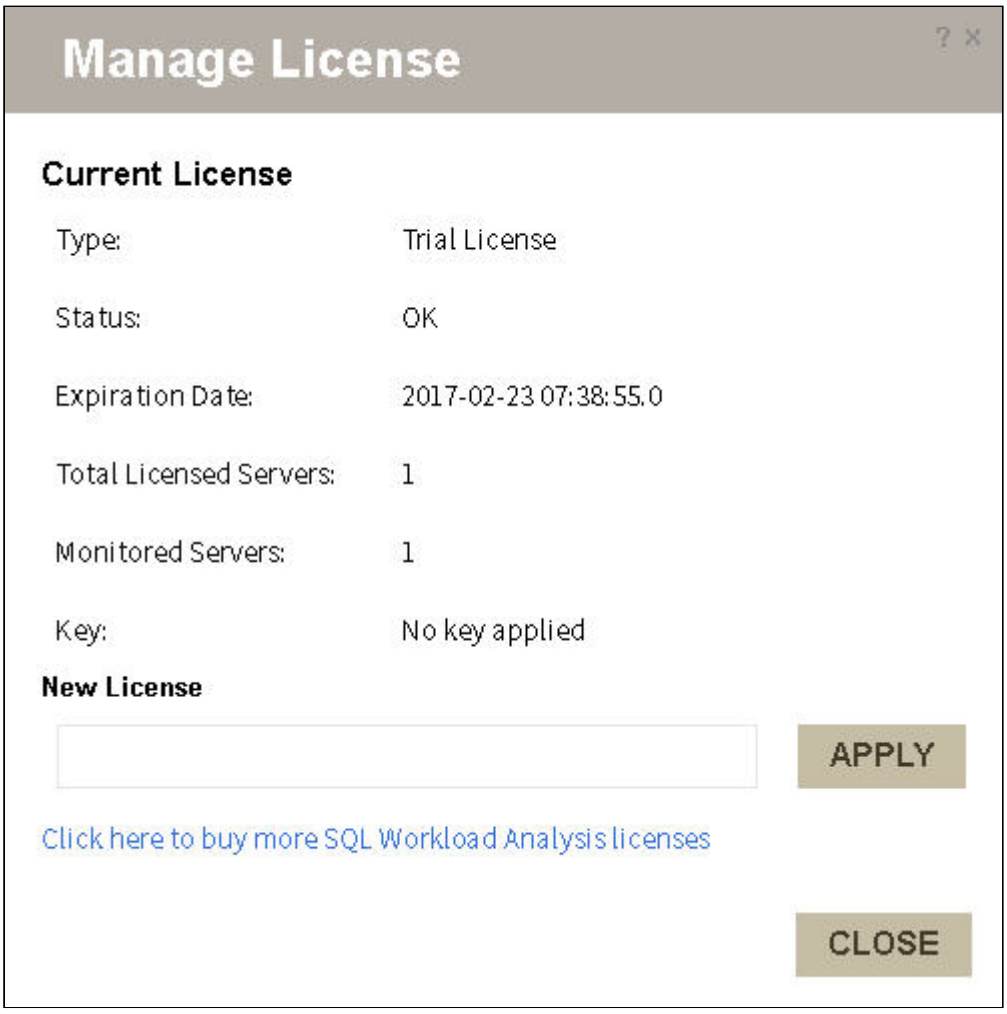
Remove Instance

Allows you to remove an instance from the list of instances monitored by SQL Workload Analysis.

To perform an action, select the instance and click the action you want to perform from the options above the list. You can also click the icon to select the action.

6.3 Manage License

You can view and modify the License information by clicking the **Manage License** option in the **Administration** tab.

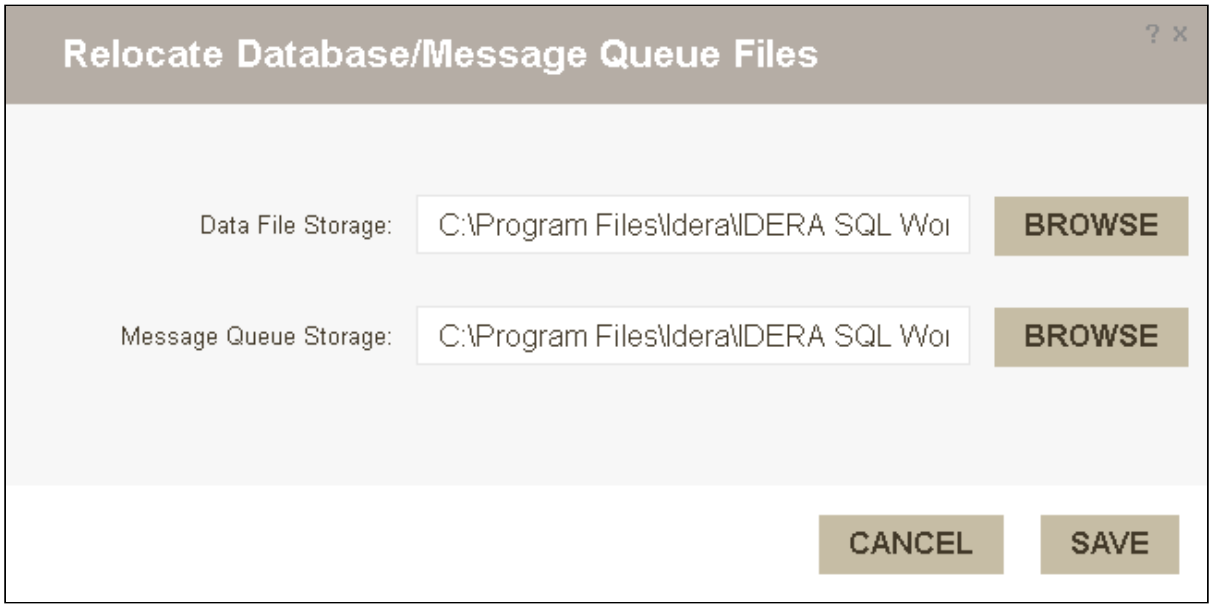


Modify the License key by typing a New License Key or go to the IDERA online store to purchase a new License.

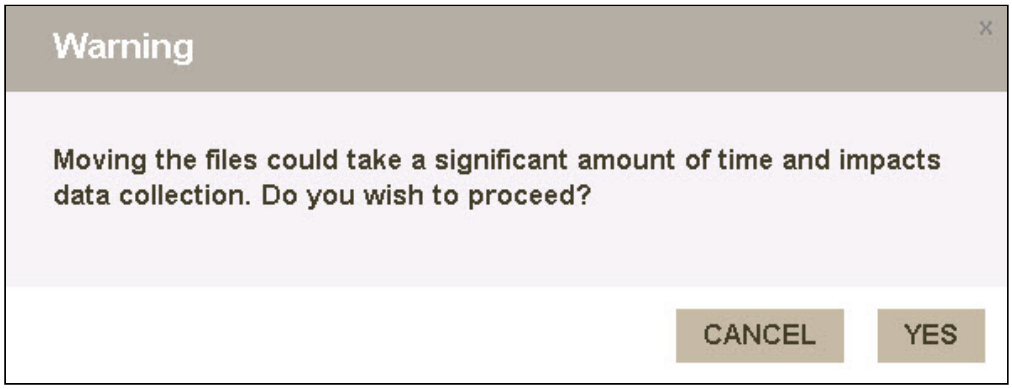
6.4 Storage

This option helps you to change the storage location of SQL Workload Analysis database and message queue files for proper distribution. To change the location, follow these instructions below:

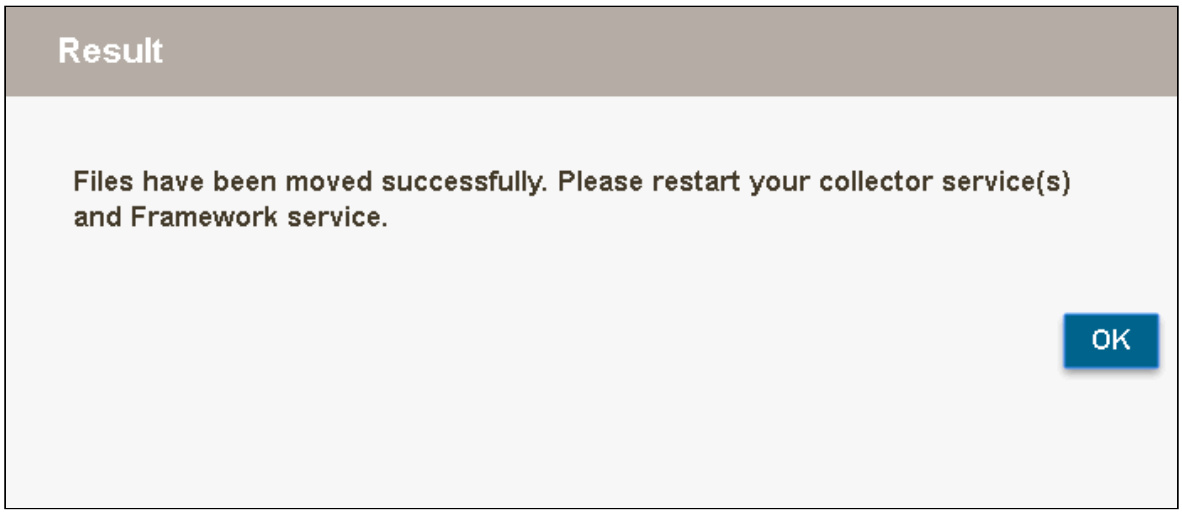
1. Click **Relocate Database/ Message Queue Files**.



2. Click **BROWSE**, to select a new location for the Data File Storage.
3. Click **BROWSE**, to select a new location for the Message Queue Storage.
4. Once you finish editing the new locations, click **SAVE**. If you do not want to save the changes, click **CANCEL**. After saving your changes, a Warning message shows up asking if you want to proceed or cancel.



5. Once SQLWA finished to move the files to the new locations, a message shows up confirming the results of the operation. Click **OK**.


Result
Files have been moved successfully. Please restart your collector service(s) and Framework service.
OK

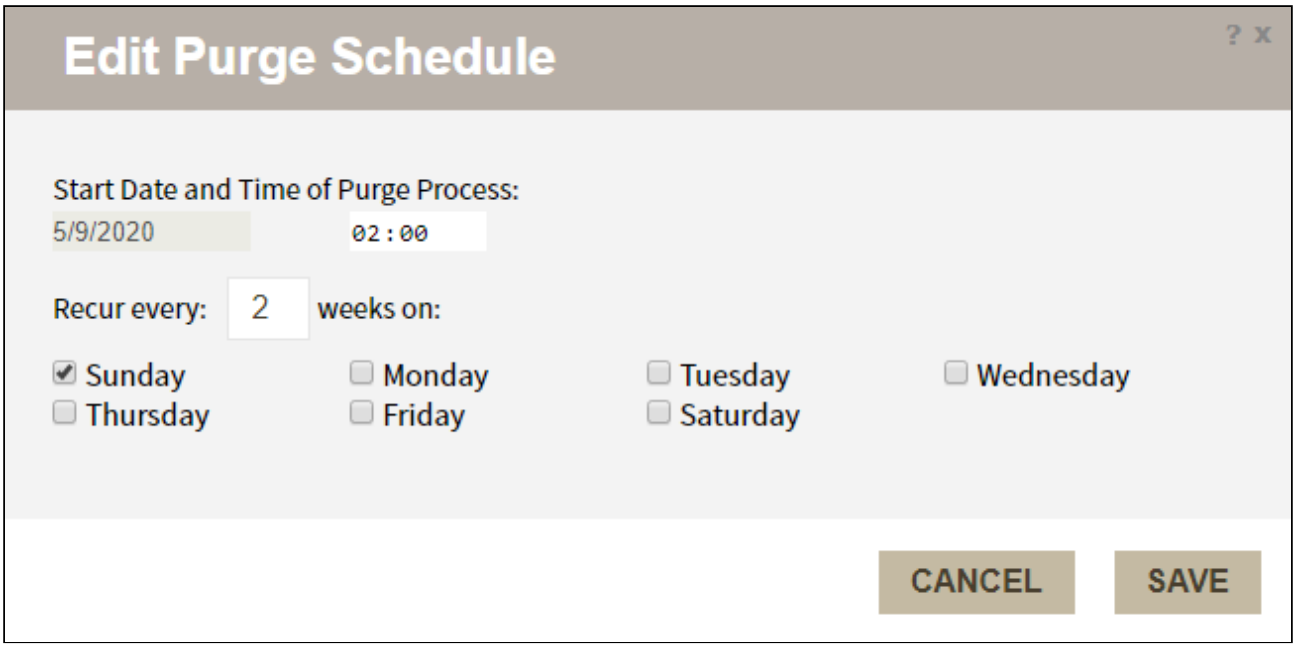
6.5 Purge Process

The Purge Process options help you to prevent locking up collections for SQL Workload Analysis. Under the Administration tab, the Purge section displays the following options:

6.5.1 Alter Purge Schedule

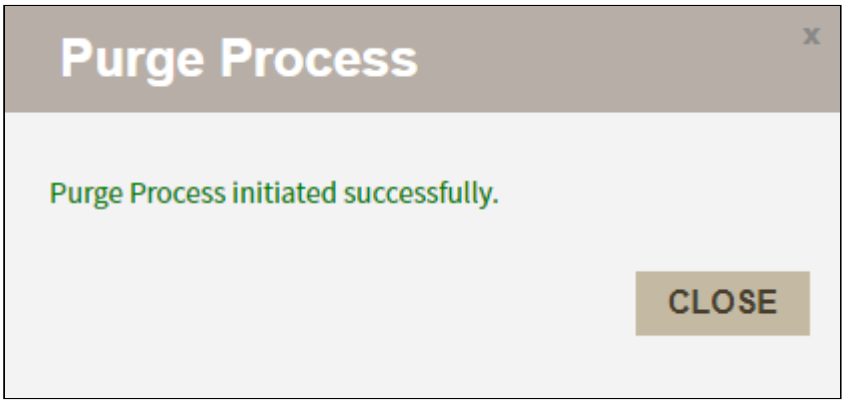
When you select the Purge Schedule Details, the Edit Purge Details dialog opens, set the Start Date and Time of the Purge Process, change the recurrence by weeks, and select the preferred days for the process.

> The schedule of the Purge process is set at 2:00 AM, every 2 weeks, and on Sunday, by default.



6.5.2 Purge PMDB Now

When you select he PMDB purge job option, the process is triggered as it was configured during the installation process.



Find the purge process logs at *C:\Program Files\Idera\IDERA SQL Workload Analysis\var\logs*

7 Enhanced Logging

Activate enhanced logging for the Idera - Collector service in SQL Workload Analysis, following these steps:

1. Stop the **Idera - Collector** and the **Idera - Framework**
2. Change the configuration of properties file:
    a. Locate the following paths:

        <<Idera SQLWA InstallationDir>>\deploy\etc\perflog.properties

        <<Idera SQLWA InstallationDir>>\etc\perflog.properties

    b. By default, the first line would be: *logger.performanceLogger=**FATAL*** , requestAppender

    c. Change the line, as follows: *logger.performanceLogger=**DEBUG*** , requestAppender

3. Start the **Idera - Collector** and the **Idera - Framework**

The Collector perflogs are created at: *<<Idera SQLWA InstallationDir>>\deploy\var\logs*

While the Framework JMS perflogs: *<<Idera SQLWA InstallationDir>>\tomcat\logs*

Wait half an hour or so to have actionable insights from the logs.

4. Stop the **Idera - Collector** and the **Idera - Framework**
5. Revert the Perflogs configuration and restart services.

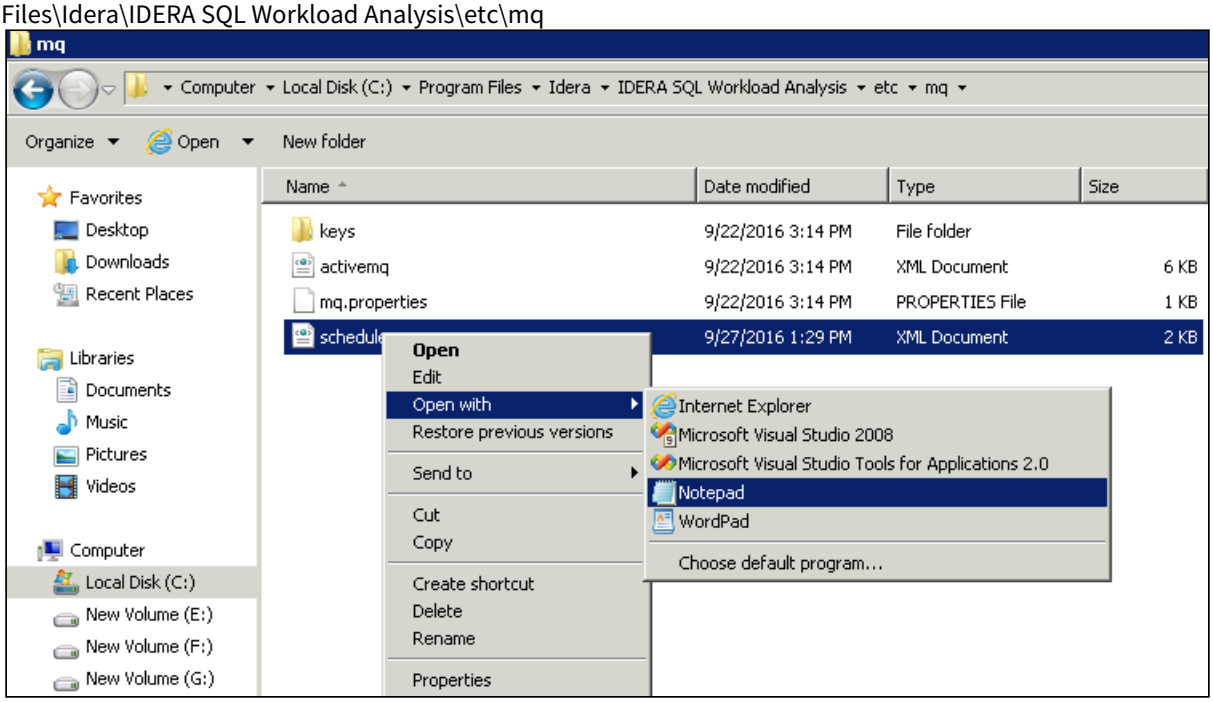
8 Set your SQL Workload Analysis grooming schedule

Grooming is the process of deleting metrics stored in the repository that are older than a given date and time. This process is important because it optimizes the performance of processes such as data collection.

> ⚠ When running an upgrade from SQLWA 1.6.3 version and above, the installer runs a clean-up routine before restarting the services.

In SQL Workload Analysis you can set your grooming schedule by following these steps:

1. Open the **schedule** file in a text editor such as Notepad, this file is located in the following path: C:\Program Files\Idera\IDERA SQL Workload Analysis\etc\mq



2. Search for the line that specifies the purge schedule in a standard cron format and edit the time value in a 24-hour format. For example, if you want to set your grooming for 8:00 PM of the 14th day of the month, the cron should be set at: **0 20 14 * *** in a standard cron format. Check the images below.

> ✔ **Default grooming time**
>
> By default, the grooming schedule time is set at 10:00 AM on the 1st day of the month.

schedule - Notepad

File Edit Format View Help

```
<beans xmlns="http://www.springframework.org/schema/beans"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:task="http://www.springframework.org/schema/task"
        xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd
http://www.springframework.org/schema/task
http://www.springframework.org/schema/task/spring-task-3.0.xsd">
        <task:scheduler id="taskScheduler" pool-size="10" />

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="summaryDbTask" method="run"
                        cron="0 3 * * * ?"  />
        </task:scheduled-tasks>
        <bean id="summaryDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="summary"/>
        </bean>

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="purgeDbTask" method="run"
                        cron="0 10 1 * * ?"  />
        </task:scheduled-tasks>
        <bean id="purgeDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="purge"/>
        </bean>

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="clusterDbTask" method="run"
                        cron="0 10 5 * * ?"  />
        </task:scheduled-tasks>
        <bean id="clusterDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="cluster"/>
        </bean>
```

schedule - Notepad

File Edit Format View Help

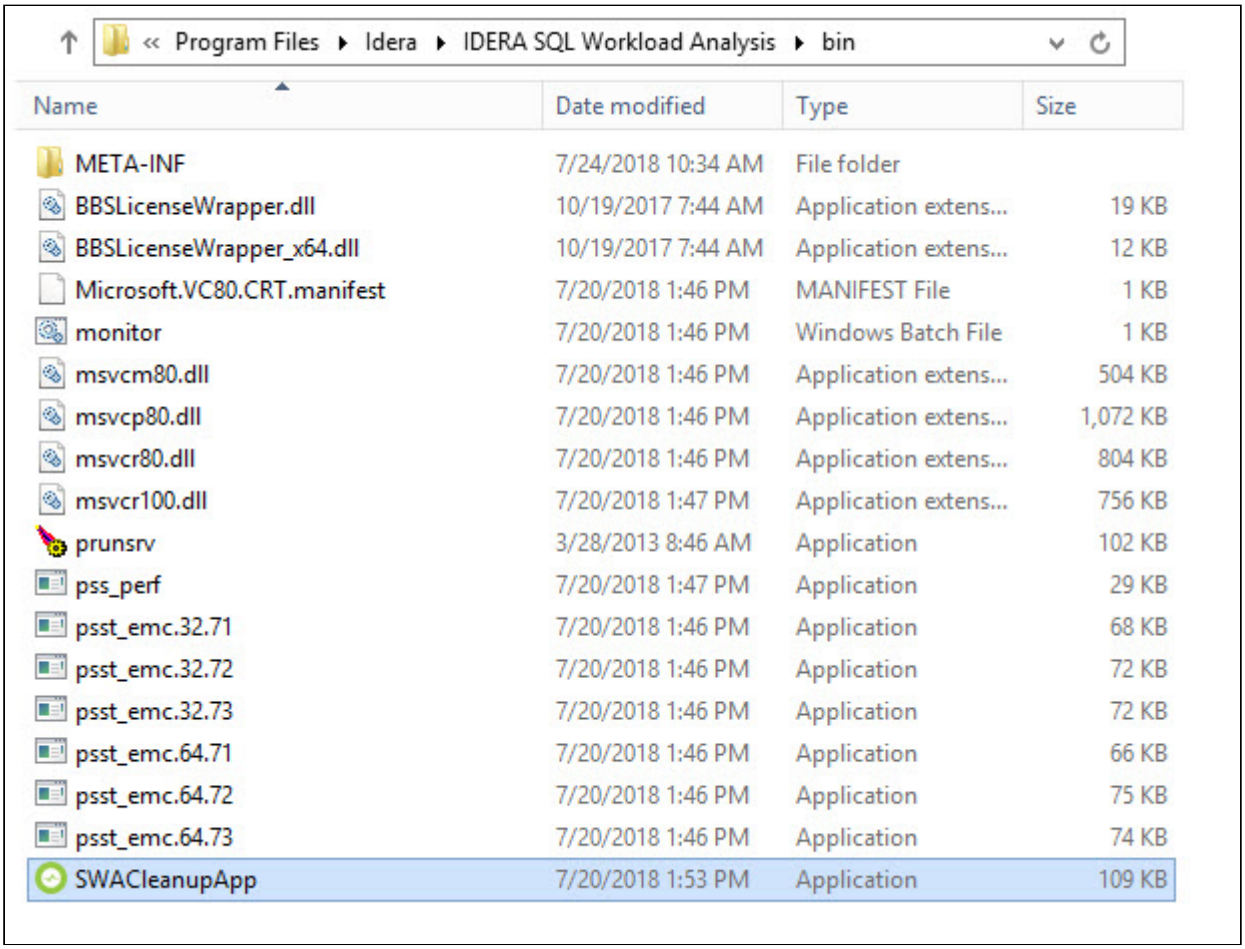
```
<beans xmlns="http://www.springframework.org/schema/beans"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:task="http://www.springframework.org/schema/task"
        xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd
http://www.springframework.org/schema/task
http://www.springframework.org/schema/task/spring-task-3.0.xsd">
        <task:scheduler id="taskScheduler" pool-size="10" />

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="summaryDbTask" method="run"
                        cron="0 3 * * * ?"  />
        </task:scheduled-tasks>
        <bean id="summaryDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="summary"/>
        </bean>

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="purgeDbTask" method="run"
                        cron="0 20 14 * * ?"  />
        </task:scheduled-tasks>
        <bean id="purgeDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="purge"/>
        </bean>

        <task:scheduled-tasks scheduler="taskScheduler">
                <task:scheduled ref="clusterDbTask" method="run"
                        cron="0 10 5 * * ?"  />
        </task:scheduled-tasks>
        <bean id="clusterDbTask" class="com.precise.standard.infra.db.jobs.ScheduledTask">
                <property name="type" value="cluster"/>
        </bean>
```

3. Restart the SQL Workload Analysis services (IDERA Collector Service and IDERA Framework service).

8.1 SQL Workload Analysis Cleanup App

SQL Workload Analysis has an SWACleanup app that is located in the installation path:

C:\Program Files\Idera\IDERA SQL Workload Analysis\bin



Once you run it by double clicking **SWACleanupApp**, a SWACleanupAppLog file is generated.

9 Monitoring EMC storage using SQL Workload Analysis

This section describes how to extend SQL Workload Analysis to monitor EMC storage used by SQL Server. As part of this, it describes what EMC software needs to be installed and how it should be configured.

9.1 Planning for EMC Solution Enabler installation

9.1.1 Which servers require Solutions Enabler installation?

EMC Solutions Enabler must be installed on the server on which the SQL Workload Analysis framework is installed. In addition, it must be installed on any server that hosts an instance of SQL Server to be monitored.

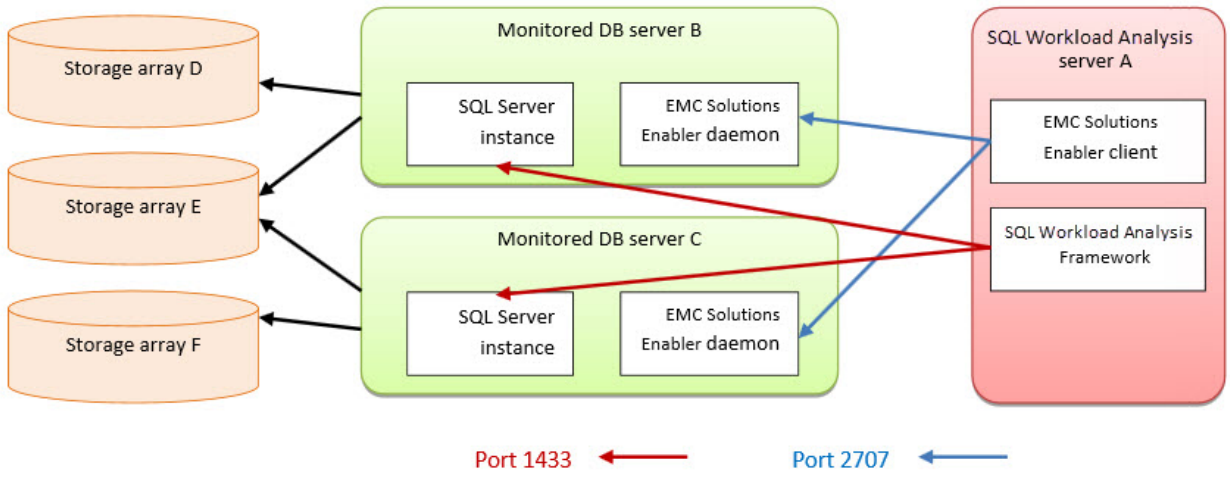
For example, if the SQL Workload Analysis framework is installed on Server A, and it is being used to monitor SQL Server instances residing on Server B and Server C, then Solutions Enabler needs to be installed on Server A, Server B, and Server C.

9.1.2 Network and security requirements

EMC Solutions Enabler client (running on SQL Workload Analysis server) should be able to send commands to Solutions Enabler daemon installed on each DB server. By default, Solutions Enabler daemon listens on port 2707. Port 2707 on each DB server must be open in the firewall for requests from the SQL Workload Analysis server.

Solutions Enabler ACL-based security is supported. If ACL is configured, the only authorization needed is BASE.

9.1.3 Installation diagram



9.1.4 About obtaining Solutions Enabler

EMC Solutions Enabler can be obtained from EMC. The EMC source for the Solutions Enabler is the EMC Extranet site – PowerLink: https://support.emc.com/downloads/2071_Solutions-Enabler.

Solutions Enabler

- You will need an account (login and password) to access this site, which is provided by EMC.
- Be sure to download the correct version of the Solutions Enabler for your platform. If you are using a 32-bit platform, download the x86 version. If you are using a 64-bit platform, download the x64 version.
- SQL Workload Analysis supports Solutions Enabler 7.2 and above. It is highly recommended to use the highest version available (currently, Solutions Enabler 7.5).

9.1.5 Virtualization considerations

SQL Workload Analysis supports any configuration supported by EMC Solutions Enabler.

Typically, hypervisors abstract the physical layers from the virtual machines. Thus, special handling is required, otherwise EMC Solutions Enabler, running on a virtual machine, will not be able to interact with the Storage array.

Microsoft Hyper-V exposes attached EMC devices using pass-through or VHD configuration. If the monitored SQL Server instance runs on a Microsoft Hyper-V guest server, only pass-through devices are supported.

VMware virtualization is fully supported by EMC Solutions Enabler, both for pass-through and VHD configuration.

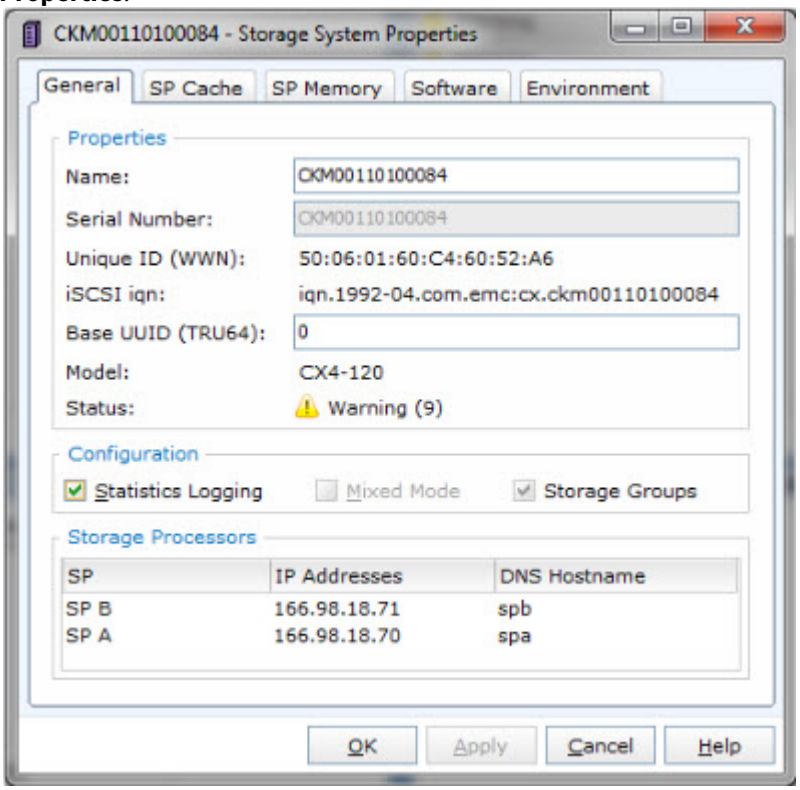
9.2 Installing Solutions Enabler

This section contains a brief walk through for Solutions enabler deployment, for the purpose of monitoring by SQL Workload Analysis. for the full procedure and options of Solutions Enabler deployment, see also the *Solutions enabler Installation Guide* document, which can be found in the document set on the EMC web site.

> A user with the administrator role is needed to complete the following procedure.

9.2.1 On the SQL Workload Analysis server

1. Install Solutions Enabler.
    a. Select the destination folder.
    b. Select the **Setup Type** (use: **Complete**)
    c. On the **Services List**, leave the default settings for the Stordeamon Services.
    d. Click **Next**.
    e. Click **Install**.
2. ***If your SQL Server instance stores its data on CLARiiON or VNX storage arrays***, **Statistics Logging** should be enabled. The following procedure should be done per storage array:
    a. Open Navisphere GUI or Unisphere web GUI. Typically, this will require a user with Storage Administrator rights and the URL of the Navisphere software.
    b. Right-click on the APM storage System (or on CLARiiON unit ID in Unisphere GUI) and select **Properties**.



    c. On the General tab, select **Statistics Logging**.
    d. Click **Apply**.
    e. Click **OK**.

f. Click **File > Save** and **Exit**.

3. Initialize Solutions Enabler (building the `symapi\db\symapi_db.bin` file).
   a. Open a Windows command prompt.
   b. Navigate to the directory in which the EMC Solutions Enabler is installed.
   c. Execute: `SYMCLI\BIN\symcfg.exe discover -all`
   The "No devices were found" message is expected and does not indicate an error.

9.2.2 On each monitored server

1. Install Solutions Enabler.
   a. Select the destination folder.
   b. Select he **Setup Type** (use: **Complete**)
   c. On the **Service List**, use the defaults and also check the **SYMAPI daemon** checkbox.
   d. Click **Next**.
   e. Click **Install**.
2. ***If your SQL Server instance stores its data on CLARiiON or VNX storage arrays*** , the monitored server should be authorized using a SYMCLI command as follows:
   a. Make sure you have the array's Storage Processors (SP) hostname or IP address, and the array's administrator username and password.
   b. Open the command prompt.
   c. Navigate to the directory in which EMC Solutions Enabler is installed.
   d. Execute: `SYMCLI\BIN\symcfg.exe authorization add -host {VNX-SP} -username {VNX Administrator} -password {VNX Administrator Password}`
3. ***If your SQL Server instance stores its data on Symmetrix (DMX or VMAX) storage arrays***, gatekeeper devices must be installed.
   a. Gatekeeper device is a small device (less than 3 MB) used by Solutions Enabler to improve the communication with the storage array. The assistance of a storage administrator is required.
   b. To verify which storage units and devices are attached to a monitored server, execute: `SYMCLI\BIN\syminq.exe`
   The following table shows an example of the command's output.

Device		Product			Device	
Name	**Type**	**Vendor**	**ID**	**Rev**	**Ser Num**	**Cap (KB)**
\\.\PHYSICALDRIVE0		SEAGATE	ST15150W	HP12	02994239	4194157
\\.\PHYSICALDRIVE1		EMC	SYMMETRIX	5265	93052361	4224000
\\.\PHYSICALDRIVE2		EMC	SYMMETRIX	5265	93052461	4224000
\\.\PHYSICALDRIVE3		EMC	SYMMETRIX	5265	93052561	4224000
\\.\PHYSICALDRIVE4	GK	EMC	SYMMETRIX	5265	93050161	2880

Device		Product			Device	
Name	**Type**	**Vendor**	**ID**	**Rev**	**Ser Num**	**Cap (KB)**
\\.\PHYSICALDRIVE5	GK	EMC	SYMMETRIX	5265	93051161	2880

c. Gatekeeper devices are marked with **GK** in the **Type** column. The two most left digits (**93** in this example) are the suffix of unit ID.
d. If gatekeeper devices are missing, ask the storage administrator to define them. To verify, execute `SYMCLI\BIN\syminq.exe` and check its output once again.

4. ***If the monitored SQL Server instance runs on a VMware guest server***, the monitored server should be authorized using a SYMCLI command as follows:
   a. Make sure you have the ESX server hostname or IP address, and the ESX server's administrator username and password.
   b. Open a command prompt.
   c. Navigate to the directory in which EMC Solutions Enabler is installed.
   d. Execute: `SYMCLI\BIN\symcfg.exe authorization add -host {ESX server} -username {ESX server Administrator} -password {ESX server Administrator Password} -vmware`
5. ***If the monitored SQL Server instance runs on a Microsoft Hyper-V guest server***, the monitored server should be authorized using a SYMCLI command as follows:

> **Note**
>
> Only pass-through devices are supported. Devices configured as VHD are not supported.

   a. Make sure you have the Hyper-V hostname or IP address, and Hyper-V's administrator username and password.
   b. Open a command prompt.
   c. Navigate to the directory in which EMC Solutions Enabler is installed.
   d. Execute: `SYMCLI\BIN\symcli.exe authorization add -host {Hyper-V hostname} -username {Hyper-V Administrator} -password {Hyper-V Administrator Password} -hyperv`
6. Initialize Solutions Enabler (building the `symapi\db\symapi_db.bin` file}.
   a. Open a Windows command prompt.
   b. Change to the directory in which the EMC Solutions Enabler is installed.
   c. Execute the discover command:
   `SYMCLI\BIN\symcfg.exe discover -all`
   This time, "No devices were found" message should be considered an error. If no devices were found, retry carefully steps 1 to 6. If still not found, open a support case using the IDERA community portal.
   d. ***If your SQL Server instance stores its data on Symmetrix (DMX or VMAX) storage arrays***, execute
   `SYMCLI\BIN\symcfg.exe list`
   Its output should list all attached Symmetrix storage units. Each of the units that are actually used to store SQL Server DB files should be marked as local in the **Attachment** column. See example:

Symmetrix	Attachment	Model	Version
000190103692	Remote	DMX3-24	5773
000190765393	Local	VMAX-1	5875

e. ***If your SQL Server instance stores its data on VNX or CLARiiON storage arrays***, execute `SYMCLI\BIN\symcfg.exe list -clariion`
Its output should list all attached VNX and CLARiiON storage units.

9.2.3 Verifying Solutions Enabler's Deployment and Configuration

The last verification step should be done on each monitored serer. It should be verified regardless of the storage array series (SYMMETRIX or CLARiiON).

To manually verify that Solutions Enabler was successfully deployed and configured:

1. Select a database file that is stored on an EMC sorage array (file size must be > 0).
2. Open a Windows command prompt.
3. Navigate to the directory in which the EMC Solutions Enabler is installed.
4. Execute: `SYMCLI\BIN\symrslv.exe file <full path and name of the selected DB file>`
5. The output should contain a table with the following column titles:
`Size`, `Array`, `Dev`, `Offset`, `PPdevName`, `Offset`, and `Attr`.
`Array` and `Dev` should present EMC unit and EMC device. If "`N/A`" is presented instead, then EMC Solutions Enabler failed to map the file. In this case, open a support case using the IDERA community portal.

9.3 Finalizing SQL Workload Analysis Storage configuration

To finalize SQL Workload Analysis configuration:

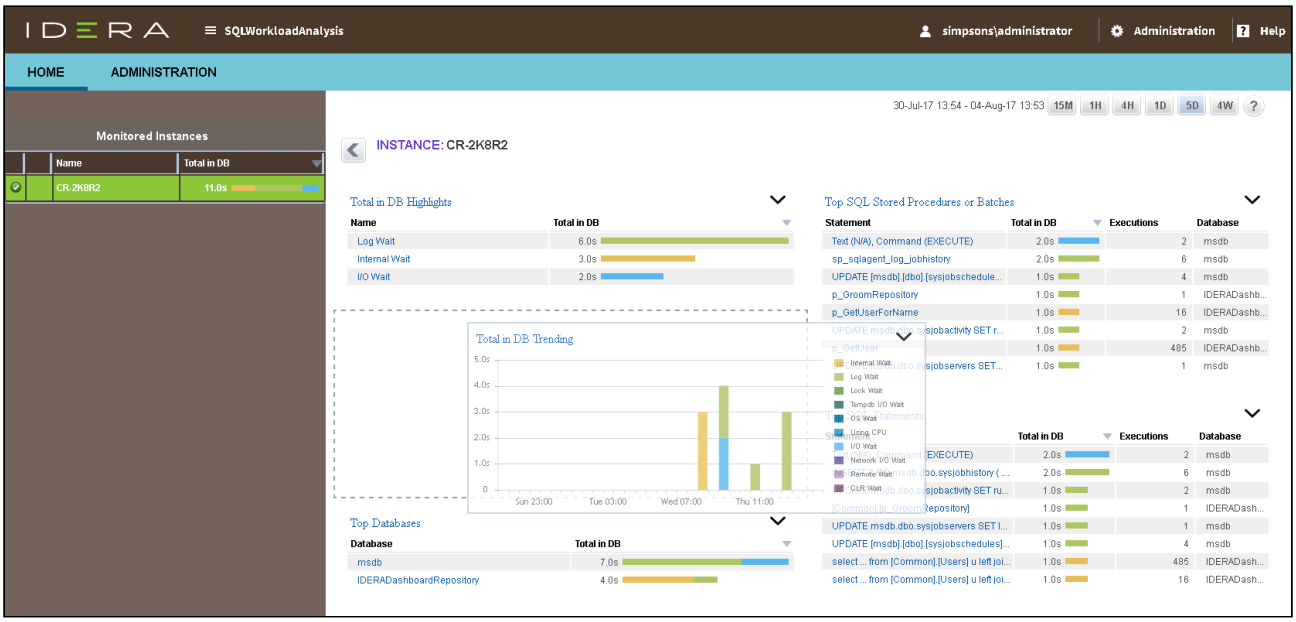
1. Login to the server on which SQL Workload Analyzer is installed.
2. Navigate to SQL Workload Analyzer installation folder.
3. Execute: `setup.exe`.
    a. Select an SQL Server instance and click the **Configure** button.
    b. Click **Next** button until getting to the EMC Storage tab.
    c. Check the **Enable EMC storage visibility** checkbox.
    d. Click the **Next** button.
4. You should start seeing EMC storage statistics in SQL Workload Analyzer GUI in 45 minutes.

10 Customize SQL Workload Analysis layout

SQL Workload Analysis allows users to customize the widgets that are shown in the main SQL Workload Analysis Dashboard.

You can customize the layout by moving (drag and drop) each panel. Modify the view of you dashboard by relevance in the most convenient location.

> You can customize all the views that you find in SQL Workload Analysis.

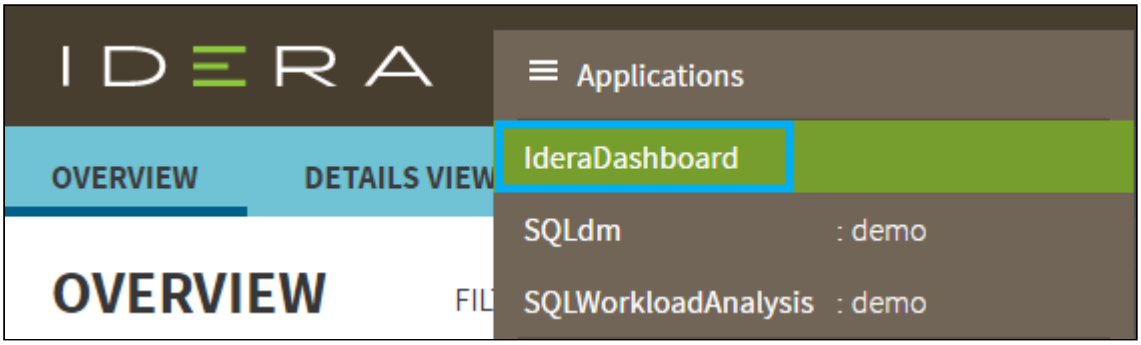


11 The IDERA Dashboard

11.1 What is the IDERA Dashboard?

The IDERA Dashboard is a common technology framework designed to support the entire IDERA product suite. The IDERA Dashboard allows users to get an overview of the status of their SQL Servers and hosted databases in a consolidated view while providing users the means to drill into individual product dashboards for details.

To access the IDERA Dashboard, select **IDERA Dashboard** from the drop-down menu, next to the IDERA logo.



The IDERA Dashboard is comprised of the following tabs:

- Overview
- Details view
- Alerts view
- Administration

11.2 What actions can be performed in the Overview tab of the IDERA Dashboard?

In the IDERA Dashboard users can glance at their registered products overall status through the **Overview** tab. This tab contains product widgets of all the products registered with the IDERA Dashboard. By default, the **Overview** tab displays the **Overall Status** widget.

From the **Overall Status** widget, you can perform the following actions:

- Click to access the **Alerts** tab of SQL Workload Analysis.
- Click to access the SQL Workload Analysis and its **Side by Side Server Performance** window.
- Click to access the SQL Workload Analysis Dashboard.

Click to expand or collapse a widget. You can also view a widget in full size by clicking or remove it by clicking .

Customize the Overview tab

You can customize this view in the **Customize DBA Dashboard** option of the **Administration** tab. Click here to learn more.

11.3 What actions can be performed in the Details view of the IDERA Dashboard?

In the IDERA Dashboard users can select specific metrics to display in the **Details** view tab. This tab contains product widgets of all the products registered with the IDERA Dashboard.

Click ^ to expand or collapse a widget. You can also view a widget in full size by clicking ⛶ or remove it by clicking ✕.

Customize the Details view tab

You can customize this view in the **Customize DBA Dashboard** option of the **Administration** tab. Click here to learn more.

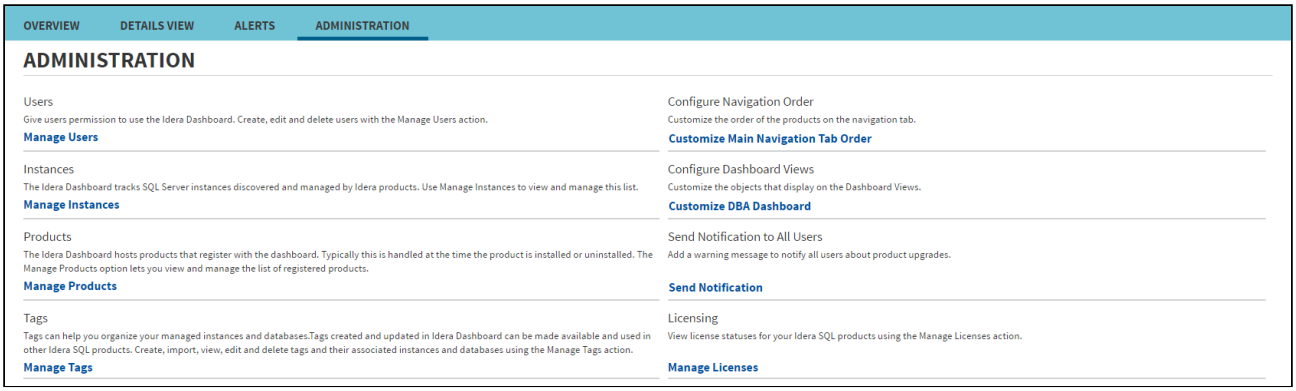
11.4 What actions can be performed in the Alerts view of the IDERA Dashboard?

In the IDERA Dashboard users can access information on all registered products current alerts and filter them based on:

- Product
- Category
- Severity
- Metric
- Tag

11.5 What actions can be performed in the Administration view of the IDERA Dashboard?

In the IDERA Dashboard, all products show a common **Administration** tab, granted the logged-in user has administrator privileges. Selecting this tab, displays the Administration view which hosts a range of sections for performing administration-related actions.

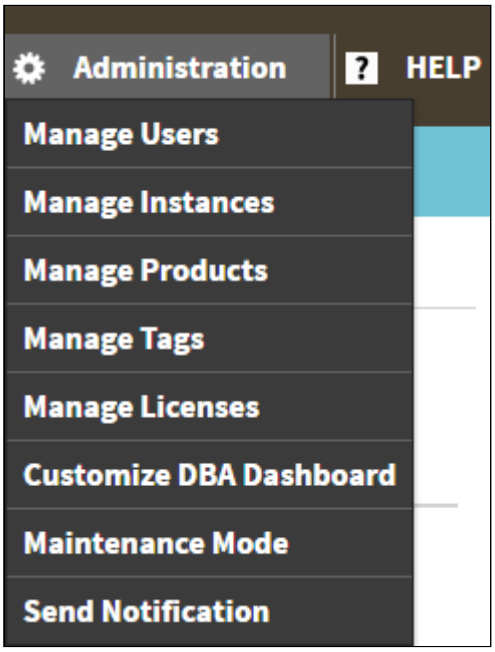


The **Administration** view of the IDERA Dashboard provides a central set of services related to specific actions such as:

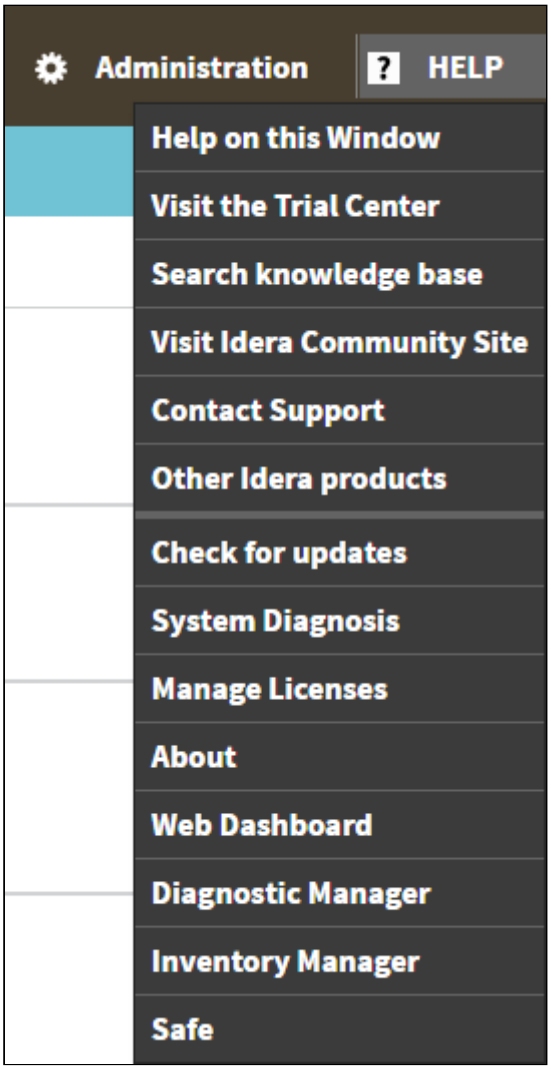
- Managing users
- Managing Products
- Managing Instances
- Customizing Navigation Order
- Dashboard Views
- Managing Tags
- Notifications to all users
- Managing Licenses

For more information on each service and what configuration settings are available, visit each respective section.

You can also access these options from the **ADMIN** drop-down on the top right corner of the UI.



Click the **HELP** drop-down on the top right corner to access a list of useful support options, tools, information, and products.


Administration
HELP
Help on this Window
Visit the Trial Center
Search knowledge base
Visit Idera Community Site
Contact Support
Other Idera products
Check for updates
System Diagnosis
Manage Licenses
About
Web Dashboard
Diagnostic Manager
Inventory Manager
Safe

11.6 Managing users in the IDERA Dashboard

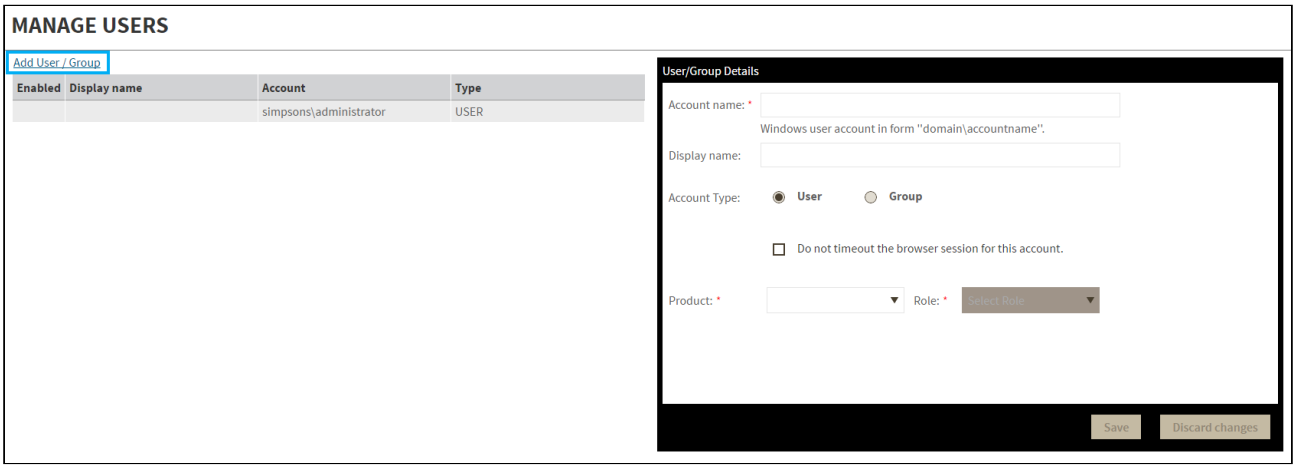
The **Manage Users** option allows users to grant access to other team members or groups and manage their roles. Users with administrative privileges are divided in:

- Dashboard administrators - the capability to manage access to Dashboard functions as well as individual products' functions.
- Product administrators - the capability to grant access to individual products for which they have administrative rights.

To add new users, edit their details (name, subscription, or email address), or remove them, select **Manage Users** in the Administration view. In the **Manage Users** window you can perform the following actions:

11.6.1 Add a user / group

In the IDERA Dashboard access is granted to Windows users or groups. To add users follow these steps:



1. Click the **Add User / Group** option and the User/Group Details panel displays.
2. Type the Account name of the user you want to grant access to. You should enter a Windows user name in the following format: **<domain\user>**.
3. Enter a Display name.
4. Select User or Group in the Account Type field.
5. Select the **Do not timeout the browser session for this account** checkbox to stay logged in.
6. In the **Product** field, you can select to add a user to the IDERA Dashboard.
7. In the **Role** field, you can assign a user the Dashboard Administrator or Dashboard guest role if you select the IDERA Dashboard in the **Product** field. If you select an IDERA product in the **Product** field, you can assign a user the Product Administrator, Product user, or Product guest role.
8. Click **SAVE**.

Provide the new user with the following URL: **http://<ServerName>:9290 or http://<localhost>:9290** to access the IDERA Dashboard.

11.6.2 Edit a user/group

This option allows you to edit the account name and display name, disable the account, and add new permissions. To edit a user or group follow these steps:

1. Select one user / group from the list of users.
2. Change the necessary settings.
3. Click **SAVE**.

11.6.3 Delete a user / group from the IDERA Dashboard

To remove a user or group, select the User / group from the list and click the **DELETE** button. A confirmation dialog displays; click **YES** to remove or **NO** to cancel.

11.7 Managing products in the IDERA Dashboard

The IDERA Dashboard hosts IDERA products that register with the Dashboard. Click the **Manage Products** option in the Administration view to open the respective window.

In the **Manage Products** window you can perform the following actions on registered products:

11.7.1 Edit a Product

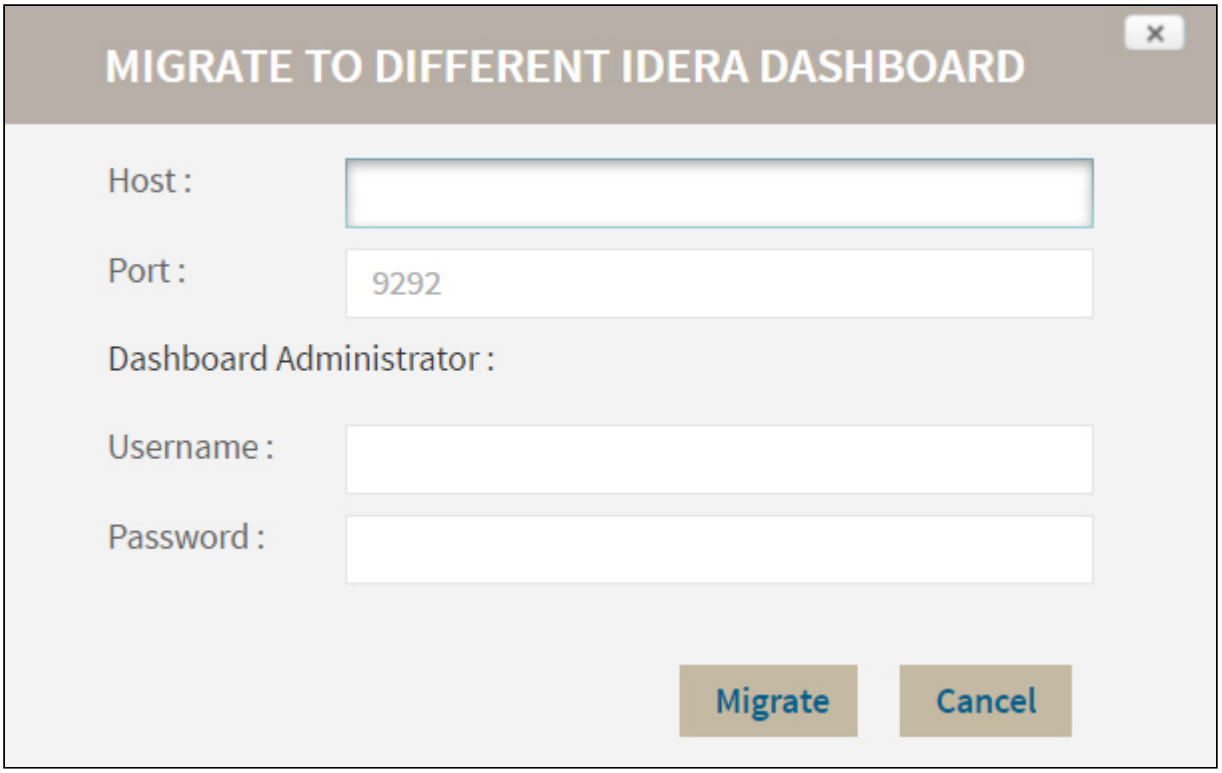
To edit a product, select it from the Products list. The Dashboard displays the settings for the selected product on the panel to the right. Make the necessary modifications and click **SAVE**.

11.7.2 Delete a Product

To remove a product, select it from the Products list and click **Delete** on the panel to the right. A confirmation dialog displays; click **YES** to remove or **NO** to cancel.

11.7.3 Migrate Product

Allows you to migrate the registered product to a different IDERA Dashboard. Select the product from the Products list and click **Migrate product**.



Fill in the requested information and click **Migrate**.

11.7.4 Register a Product

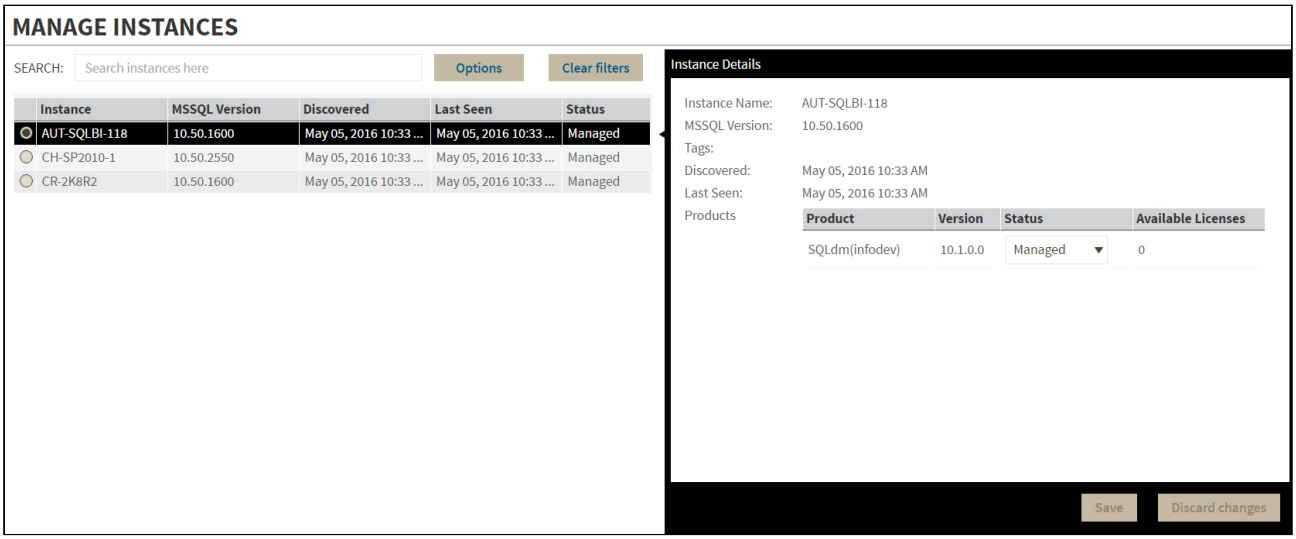
The IDERA Dashboard allows you to Register a Product. Click **Register a Product** to display the configuration settings.

Type all the requested information and click **Register.**

11.8 Managing Instances in the IDERA Dashboard

The IDERA Dashboard tracks SQL Server instances, discovered and managed by different IDERA products. The Instances widget of the Administration view, allows users to view and manage registered instances.

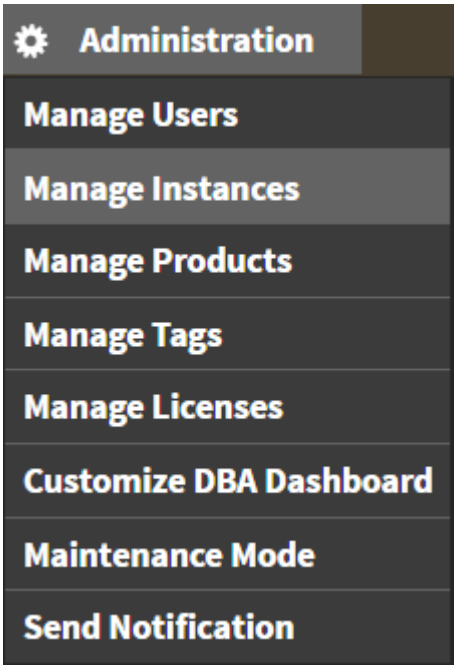
To view coverage or remove registered instances that no longer exist in your SQL Server environment, select **Manage Instances** in the Administration view, and the Managed Instances window displays.



Select an instance to view its details and modify its Status.

Click **OPTIONS** to access the filtering options.

You can also access the Manage Instances option from the **ADMIN** drop-down on the top right corner of the UI.



11.8.1 Permissions for Managing Instances

- **Dashboard Administrator** - can add, edit, and remove instances from a product for all products.
- **Dashboard Guest** - can have a read-only view the instances summary and detail sections for all products.
- **Product Administrator** - can add, edit, and remove instances from the specific product.
- **Product Guest** -can have a read-only view of instance summary and detail sections for the specific product.
- **Product User** - can add, edit instances summary, and detail sections for the specific product. View of instances summary or details sections should be restricted to the specific product.

11.9 Configure navigation order in the IDERA Dashboard

The **Configure Navigation Order** option of the Administration view allows you to modify the order in which the navigation tab displays the IDERA products.

Click the **Customize Main Navigation Tab Order** option and a dialog displays.

Drag and drop products to the desired order and click **Save**.

You can also modify the order of the products from the **Products** drop-down menu. Click **Customize** to enable the drag and drop feature. Select a product and release it in the desired position.

Click **Save** when you are done.

11.10 Configure the IDERA Dashboard view

The **Configure Dashboard Views** option allows users to customize which product widgets are shown in the Overview and Details view tabs of the IDERA Dashboard.

Click the **Customize DBA Dashboard** option in the **Administration** tab to display the Customize DBA Dashboard configuration panel.

In the Customize DBA Dashboard dialog you can try the following:

- Select to hide or show the DBA Dashboard to all users or to users with permissions in two or more products.
- Select the View you want to modify (Overview or Details View).
- Add or remove columns from the selected View.
- Specify the column widths.
- Add product widgets.
- Remove widgets.
- Re-arrange widgets (drag and drop).

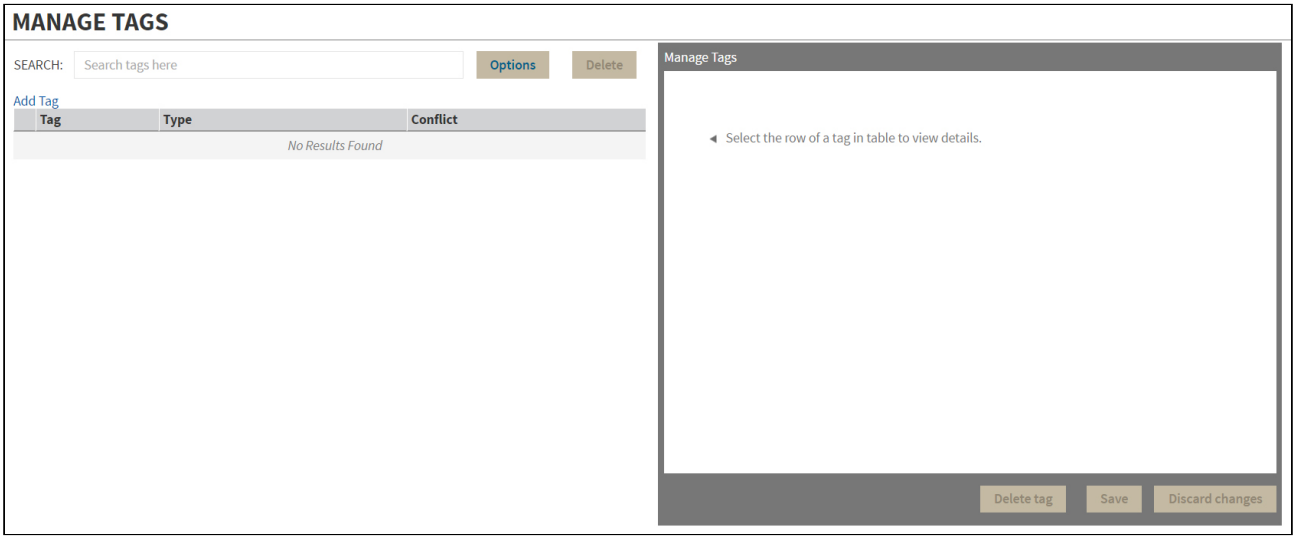
Additionally, you can:

- Modify specific settings for each widget, such as its default state (Expanded or Collapsed).
- Assign another widget to a previously placed widget.

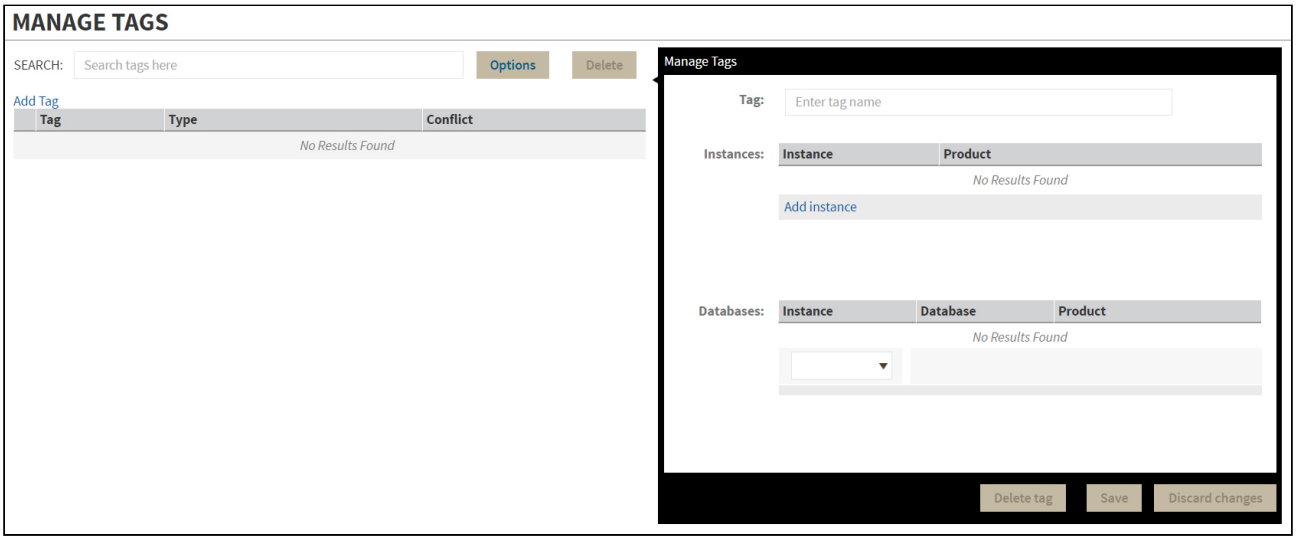
11.11 Managing Tags

Tags can help you organize your managed instances and databases. Tags created and updated in the IDERA Dashboard can be made available and used in other IDERA SQL products. This feature allows you to import, view, edit, and delete tags and their associated instances and databases.

Click **Manage Tags** in the **Administration** tab to display the configuration window.



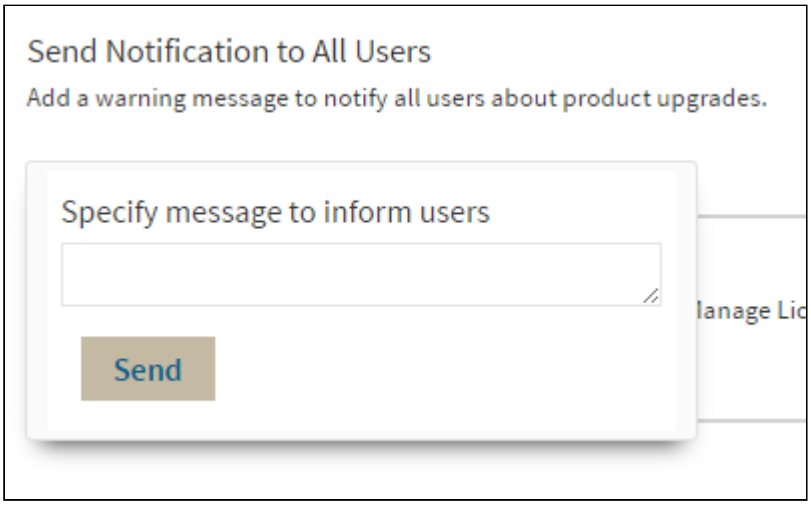
Click **Add Tag** to display the configuration panel to add a tag to a certain instance or database or select an existing entry from the list to edit its settings.



11.12 Sending notifications

The IDERA Core Web Framework 3.0 allows you to send notifications over Email to all registered users in the IDERA Dashboard.

Click **Send notification** in the **Administration** tab to open a text field to enter the message you want to send.



Click **Send** to send the notification message.

> ⚠ The Notifications feature requires you to previously configure SMTP settings. Email notifications can only be sent to users with a registered Email address.

11.13 Manage Licenses

SQL Workload Analysis does not display license information in this view. You can access your SQL Workload Analysis license information from the **Manage License** option in the Administration tab of SQLWA. Click here for more information.

12 Frequently asked questions

12.1 Where is SQL Workload Analysis installed? Should I install anything on the database machine?

SQL Workload Analysis monitors SQL Server instances remotely (agent-less), from a dedicated framework machine. SQL Workload Analysis has a web-based interface that you can use, via a browser, from any machine that can access the framework machine.

12.2 How is SQL Workload Analysis different from the Precise for SQL Server Enterprise edition?

It is based on the same collection technology, but there's a completely new UI, and it is designed from the bottoms up to be extremely easy to install and to use. SQL Workload Analysis is focused on SQL Server performance tuning, stemming from 20 years' R&D and DB tuning experience - all packaged in a user-friendly and effortlessly-deployed application. Precise for SQL Server Enterprise Edition complements SQL tuning with full-blown enterprise functionality including alerts, reports, up-stream application context, and network monitoring.

12.3 How can I pause monitoring an instance?

When adding monitoring for an instance, a dedicated Windows Service is created on the framework machine. Stopping/starting this Service will stop/start the monitoring for that instance.

12.4 I see a performance peak in one of the graphs. How do I zoom in to investigate it further?

SQL Workload Analysis has an easy zoom functionality. Simply drag your mouse with the left button click over the graph, drawing a rectangle to define the area you want to zoom in on. SQL Workload Analysis will zoom in quickly on this area. Note: zoom is enabled in all graphs besides in "Current" pane. Graphs displaying current information always show last 30 minutes of data in maximal granularity.

12.5 Data has stopped being collected. How do I troubleshoot this?

Troubleshoot data collection pauses with the following: Check whether the Windows Service of the collector is up and running. If it is stopped, restart it. Check whether the monitored instance's credentials were changed. If this is the case, SQL Workload Analysis will not be able to connect to the monitored instance until the new credentials are provided. Rerun Setup.exe from the installation root folder to update credentials.

12.6 How to monitor in failover cluster configuration?

Install the SQL Workload Analysis framework on a dedicated server outside of the cluster. During setup, specify the logical (cluster) instance name as the SQL Server instance to be monitored. In case of failover, the collector will identify the failover in a second, and within moments will resume monitoring automatically without any manual intervention.

12.7 How do I upgrade from trial to standard version to continue monitoring beyond the trial's period?

Visit the IDERA Online Store to purchase a license.

12.8 How can I control the time frame of the displayed data?

SQL Workload Analysis provides simple shortcuts for setting desired time frame (e.g. last 8 hours) – these shortcuts are displayed on the top right part of the screen. Besides the shortcuts you can always zoom in from any graph (except for "Current" pane that always shows last 30 minutes).

12.9 What does "Total in DB" measure?

"Total in DB" is the total amount of time spent by the application/s inside the database over the selected time period. This measurement allows you to quickly identify the activities with the most significant contribution to DB resources usage. This time is divided into productive "Using CPU" time and non-productive waits for resources. This breakdown is clearly displayed along with the absolute time measurements.

12.10 What is the refresh rate of the SQL Workload Analysis views?

The main dashboard portlets are refreshed every 15 minutes. The "Current" pane's portlets are refreshed every minute. The rest of the screens are not automatically refreshed since they are designed for investigating performance bottlenecks and should not be refreshed without user's intention.

12.11 What are the units I see next to the time displays (including in the Y axis of the graphs)?

The units are: µs – microsecond, ms – millisecond, s – second, m – minute, h – hour, d – day, w – week.

12.12 For some SQL statements, why don't I see summary values regarding physical reads, logical reads, etc.?

These values are not accessible whenever a statement is not kept in the SQL Server's procedure cache.

12.13 What are the "Top Accessed Objects" I see for a SQL statement?

Accessed objects are the tables and the indexes the statement is utilizing during its execution. This display allows you to understand object bottlenecks even without analyzing the execution plan.

12.14 How should I work with the Locking Sessions (Blockers) portlet to analyze locking situations?

The sessions appearing on the top of the hierarchy are the blocker sessions. They are also colored in red. To release the lock you may need to consider killing these blocker sessions. The number that you can see after the program's name is the client process ID, which should help you in locating the blocker. The sessions appearing beneath the blocker sessions are the locked sessions. Each locked session can in its turn cause additional sessions to become locked – these locked sessions will appear further down in the hierarchy. When

looking at the locked session this column presents the locked statement. When looking at the blocker session this column presents the last statement that was executed by the session. Many times it will represent the locking statement.

12.15 The main dashboard shows only top databases/statements. How can I see more in the list?

Drill down through the links provided inside the lists to get to the designated page showing much longer lists and the important details for each item.

12.16 What does the "Table Cardinality" column mean in the statement's execution plan's display?

This column shows the number of rows in the access table. It may appear when the Operator name is: Table scan, Index seek, or Clustered index seek. Table cardinality should be used in conjunction with the value of Returned row column. Returned rows shows how many rows were returned after applying all the filter predicates for the selected operation. It allows calculating filtering ratio and assessing the potential of using an index. Let's assume: Operation name is Table scan, Table cardinality is 1000000, and Returned rows is 50. It means that SQL Server sequentially scans a 1000000-row table while only 50 rows were qualified after applying relevant filter predicates. Normally an index may help when the filter ratio (Returned rows / Table cardinality) is less than 1%. You may view filter predicates applied by an Operation by hovering on the Operation and then clicking the More properties link in the presented tool tip.

12.17 Locks trending graph shows lock types including "MD" prefix – what is it?

"MD" stands for METADATA. It means that the locked object is not user data such as table row or index key. The locked object is some dictionary object that describes user objects. In most cases METADATA locks are caused by DDL (create, alter, drop) rather than DML (insert, update, delete) statements. "MD Partition Lock" means that the partition function of a partitioned table is locked. It may happen when adding / removing partitions. During that time, any application trying to access that partitioned table will be locked. "MD Statistics Lock" means that the lock is due to trying to gather statistics on user objects and update the statistics in system tables. Updating stats in system tables may lock the optimizer when trying to generate an execution plan for queries that access objects on which statistics were gathered. "MD Other Lock" stands for any other METADATA lock (not one of the two mentioned above). The full list of METADATA sub types reported by SQL Server is documented as part of column `resource_subtype` of table `sys.dm_tran_locks`.

12.18 How can I extend SQL Workload Analysis' visibility into EMC storage?

SQL Workload Analysis provides deep visibility past the database and into the EMC storage array, including the ability to detect contention on physical disks or virtual pools. In order to enable this extended visibility, some EMC software needs to be installed on the SQL Workload Analysis server as well as the database hosts. Please consult the following document for the full details of how to extend SQL Workload Analysis' visibility into EMC Storage: SQL Workload Analysis – Installing and Verifying EMC Solution Enabler.

12.19 Why do certain statements show zero execution counts?

IDERA SQL Workload Analysis computes the top SQL statements in terms of time spent in the database from one source of such data in the system tables of SQL Server and correlates this with the execution count of that statement from another source (i.e another set of system tables in the SQL Server). Because of sampling rates, sampling errors, and the transient nature of the latter source, the correlation is sometimes not possible for certain statements with very few executions in any given time frame.