ICONICS 10.96

Getting Started | Hyper Historian™

November 2019

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Hyper Historian

Getting Started Guide

Version 10.96

Document No. UG-HH-1096

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TABLE OF CONTENTS

1 HYPER HISTORIAN ARCHITECTURE

1.1 Introduction

Companies today are faced with the need to perform efficiently and competitively with fewer resources. For plant-level operations, today's systems need to connect to different infrastructures for data gathering and users need to analyze and visualize data in real time. Access to plant data is fundamental to staying competitive and efficient. The demand to produce products faster or streamline operations is increasing across the globe. ICONICS' Hyper Historian™ enterprise-wide plant historian allows you to gain that competitive advantage, by organizing all your real-time information from across the enterprise.

Hyper Historian is ICONICS' high-speed, reliable and robust plant historian. In order to analyze and visualize data in real time, organizations must have access to plant data and reporting. Hyper Historian is designed to log large volumes of data, in excess of 100,000 updates per second, and connects to multiple data sources across the enterprise including OPC UA, OPC DA, OPC XML DA, BACnet, SNMP and many more. ICONICS Hyper Historian also provides full, web-based configuration. Optional redundant configurations are supported using redundant Hyper Historian Collectors and redundant Loggers, and Hyper Historian offers Store and Forward technology as part of its integrated redundancy solution.

Hyper Historian optionally utilizes an advanced Swinging Door algorithm to allow for high compression, and takes full advantage of 64-bit hardware and software architectures, enabling it to access more CPU power and memory than traditional 32-bit-based historians and providing highest performance possible. The Swinging Door algorithm is available with configurable compression, but is based on a space-saving design that intelligently logs data without losing precision.

1.2 What Is Hyper Historian?

Features and Benefits of Hyper Historian include:

- High Performance 64-bit Scalable Plant Historian
- Archive and Compress Data at +250,000 Values/Second
- Hyper to Hyper Distributed Solutions
- Rich 2D and 3D Charts, Trends, Grids and Tables
- Desktops, Browsers, Phones, and SharePoint Enabled
- Performance Calculation Engine Delivers Advanced Analytics
- Integrated Redundant Architecture for Mission-critical Solutions
- Remote Collectors with Reliable Store-and-forward Technology
- Accessible via SQL Query Language OPC HDA and APIs
- Easily Merge Lab and other Offline Data with MergeWorX
- OPC, OPC UA, BACnet, SNMP, SQL, and Web Services
- Cloud Hyper Historian for Microsoft Azure

Hyper Historian can use Swinging Door data compression for storing huge volumes of quickly changing data. But, even without the Swinging Door data compression, it is capable of logging in excess of 250,000 data events per second on reference hardware for real-time, enterprise-wide information.

Hyper Historian also has robust, built-in software redundancy for mission-critical applications that require uninterrupted access and collection of data. Automatic store-and-forward technology ensure data integrity, in the event of system upset or communications disruption.

Hyper Historian uses advanced data integration, providing unsurpassed connectivity to any device via OPC UA, OPC HDA, OPC XML, SNMP, BACnet or database values. Users can easily collect information from multiple plants, facilities or throughout the enterprise.

Data sources such as PLCs, I/O devices, HMI applications and network devices can be collected and stored for reporting and analysis.

Hyper Historian includes an industry standard SQL Query interface, enabling tight integration with Microsoft SQL-compatible database such as Microsoft SQL Server. Hyper Historian also has a unique, automated archiving feature that allows for routine or triggered scheduling of data archives, freeing up disk space and backing up files for long-term storage and/or retrieval.

The Workbench inside Hyper Historian features a thin client, optimistic concurrent design, acting as the central configuration environment and operator interface. The runtime operational interface allows for complete visualization of real-time and historical data with 2D and 3D charts. The Workbench's advanced configuration console performs complete service management and has integrated layout/project management and remote pack-and-go deployment capabilities.

From the Workbench, operators can add fully customizable 3D trends and charts. Users can choose from a wide library of 3D charts such as X vs. Y, logarithmic, bar graph, strip chart recorder, circular and more, to build clear and accurate representations of real-time and historical data. Intuitive ribbons and galleries help to customize trends by adding color, gradients, smooth animation, translucency/glass effects, anti-aliasing and more, making data analysis clear and straightforward. Users can drag and drop sources during runtime and view multiple trends simultaneously.

Users can trend production numbers against a target. Data can also be exported in tabular formats and it is possible to enter operator comments, as well as manage lab data and audit trails in accordance with FDA 21 CFR Part 11 policies.

Hyper Historian can also connect with the entire ICONICS BizViz Manufacturing Intelligence/Business Visualization suite, to create best-in-class reporting, analysis, portal or data bridging applications.

For additional information about ICONICS products, please visit the ICONICS website at **www.iconics.com**.

2 INSTALLING HYPER HISTORIAN

2.1 System Requirements and Recommendations

Hyper Historian Standard Edition has the following system requirements.

Before installing any products please make sure you have the correct prerequisites installed.

ICONICS Suite

ICONICS advanced visualization, productivity, and sustainability solutions are built on its flagship products: GENESIS64™ HMI/SCADA, Hyper Historian™ plant historian, AnalytiX® solution suite and MobileHMI™ mobile apps. ICONICS is leading the way in cloud-based solutions with IoTWorX™, which helps customers embrace the Internet of Things (IoT) and Industry 4.0. This end-to-end software solution provides remote cloud monitoring and analytics via low-cost IoT gateway devices. Delivering information anytime, anywhere, ICONICS solutions scale from the smallest standalone embedded projects to the largest enterprise applications.

ICONICS System Requirements vary between:

- **Minimum Requirements**
- **Medium-powered Requirements**
- **High-powered Requirements**

System Requirements - Minimum Requirements

CPU

Dual Core 64-bit processors (e.g., AMD Athlon 64 X2, Intel Xeon, and AMD Phenom)

Memory

4 GB of RAM is required (6 GB Recommended)

Note: It is recommended that the system page file size be a minimum of four (4) times the size of installed (physical) RAM.

Note: It is recommended that the virtual memory allotment be two times the amount of physical memory (RAM) on the system.

Hard Disk

At least 4 GB free hard disk space is required (10 GB Recommended)

Drive

DVD Drive for Installation

Video Card

Onboard Video Memory (256MB) Display resolution minimum - 1024x768, 32-bit color

DirectX 9 or 10 Video Card or better

Operating System

- Windows 10 x64 (Pro or Enterprise Edition)
- Windows 8.1 x64 (Pro or Enterprise Edition)
- Windows 7 SP1 x64 (Professional or Enterprise Edition)
- Windows Server 2019
- Windows Server 2016 x64

- Windows Server 2012 R2 x64
- Windows Server 2012 x64

Note: Windows 10 Anniversary Update is required for MobileHMI UWP app.

Note: Server-class operating system highly recommended for web hosting and AnalytiX features.

.NET Framework

Microsoft .NET Framework 4.7.2

Web Server/Access

Microsoft Internet Information Services (IIS) 7.0 or higher

Edge, Internet Explorer, Firefox, Safari, or Chrome

SQL Server

- Microsoft SQL Server 2019
- Microsoft SQL Server 2017
- Microsoft SQL Server 2016
- Microsoft SQL Server 2014
- Microsoft SQL Server 2012 R2

Notes:

- The connection to SQL Server data source may be either local or remote.
- ICONICS supports SQL databases with encryption.

System Requirements - Medium-powered Requirements

CPU

Quad Core 64-bit processors or better (e.g., AMD Athlon 64 X2, Intel Xeon, and AMD Phenom)

Memory

8 GB of RAM or higher

Note: It is recommended that the system page file size be a minimum of four (4) times the size of installed (physical) RAM.

Note: It is recommended that the virtual memory allotment be two times the amount of physical memory (RAM) on the system.

Hard Disk

At least 4 GB free hard disk space is required (10 GB Recommended)

Drive

DVD Drive for Installation

Video Card

Onboard Video Memory (500MB) Display resolution minimum - 1024x768, 32-bit color

DirectX 9 or 10 Video Card or better

Operating System

- Windows 10 x64 (Pro or Enterprise Edition)
- Windows 8.1 x64 (Pro or Enterprise Edition)
- Windows 8 x64 (Pro or Enterprise Edition)
- Windows 7 SP1 x64 (Professional or Enterprise Edition)

- Windows Server 2019
- Windows Server 2016 x64
- Windows Server 2012 R2 x64
- Windows Server 2012 x64

Note: Windows 10 Anniversary Update is required for MobileHMI UWPapp.

Note: Server class operating system highly recommended for web hosting and AnalytiX features.

.NET Framework

Microsoft .NET Framework 4.7.2

Web Server/Access

Microsoft Internet Information Services (IIS) 7.0 or higher

Edge, Internet Explorer, Firefox, Safari, or Chrome

SQL Server

- Microsoft SQL Server 2019
- Microsoft SQL Server 2017
- Microsoft SQL Server 2016
- Microsoft SQL Server 2014
- Microsoft SQL Server 2012 R2
- Microsoft SQL Server 2008 R2 SP1

Notes:

- The connection to SQL Server data source may be either local or remote.
- ICONICS supports SQL databases with encryption.

System Requirements - High Powered Requirements

CPU

Quad Core 64-bit processors or better (e.g., AMD Athlon 64 X2, Intel Xeon, and AMD Phenom)

Memory

16 GB of RAM or higher

Note: It is recommended that the system page file size be a minimum of four (4) times the size of installed (physical) RAM.

Note: It is recommended that the virtual memory allotment be two times the amount of physical memory (RAM) on the system.

Hard Disk

At least 4 GB free hard disk space is required (10 GB Recommended)

Drive

DVD Drive for Installation

Video Card

Onboard Video Memory (1GB) Display resolution minimum - 1920x1080, 32-bit color

DirectX 9 or 10 Video Card or better

Operating System

Windows 10 x64 (Pro or Enterprise Edition)

Windows 8.1 x64 (Pro or Enterprise Edition)

Windows 8 x64 (Pro or Enterprise Edition)

Windows 7 SP1 x64 (Professional or Enterprise Edition)

Windows Server 2019

Windows Server 2016 x64

Windows Server 2012 R2 x64

Windows Server 2012 x64

Note: Windows 10 Anniversary Update is required for MobileHMI UWP app.

Note: Server class operating system highly recommended for web hosting and AnalytiX features.

.NET Framework

Microsoft .NET Framework 4.7.2

Web Server/Access

Microsoft Internet Information Services (IIS) 7.0 or higher

Edge, Internet Explorer, Firefox, Safari, or Chrome

SQL Server

- Microsoft SQL Server 2019
- Microsoft SQL Server 2017
- Microsoft SQL Server 2016
- Microsoft SQL Server 2014
- Microsoft SQL Server 2012 R2
- Microsoft SQL Server 2008 R2 SP1

Notes:

1. The connection to SQL Server data source may be either local or remote.
2. ICONICS supports SQL databases with encryption.

NOTE: The requirements described above are based on typical applications. Depending

on your specific application, the minimum requirements may vary.

Optional Hardware

- Ethernet adapter, WiFi card, or cellular 3G/4G
- USB port (for hardware license)
- Serial COM ports or other adapters (for data I/O)

Uninstalling

It is recommended by ICONICS to use Add/Remove Applications from Control Panel to uninstall the applications. Since applications are registered in the registry, Add/Remove uninstalls the product and makes the required registry changes for you.

If you uninstall some common components that are used by the product, you may be required to register those components again or simply reinstall the product.

NOTE: Do not delete the files and directories manually; doing so will leave the registry entries intact and interfere with future installations. Please use the uninstall feature of the operating system!

2.2 Data Sizing and Storage

General Disk Space Requirements

When estimating the amount of disk space required to run Hyper Historian, be sure to consider:

- Available disk space to install required software components and files.
- Disk space required to store Hyper Historian data files.
- Disk space required to store the Hyper Historian archive data files themselves.

Disk Requirements for Software Components

The following table describes the ***minimum disk space required*** to install the software (besides the operating system) for Hyper Historian.

Software	Minimum Disk Space Required
Microsoft SQL Server	See your Microsoft documentation.
Common Component Files	20 MB or more
Hyper Historian program files, including Workbench and documentation	300 MB

Disk Requirements for Configuration Database Files
All of the historian configuration data is stored within a separate database. The configuration data in the database file remains relatively static and usually never causes the file size to go above tens of megabytes.

Note: Historical plant data is not stored in the database files. This type of data is stored in special archive files.

The minimum disk space for the database files is as follows:

File	Size
Configuration database file	10 MB
Configuration log file	10 MB

The configuration database is set to automatically expand at a 10% rate (the default).

You cannot change these defaults during the installation. The databases can be resized later using Microsoft SQL Server utilities. For more information on sizing databases, see your Microsoft SQL Server documentation for guidelines.

Disk Requirements for Historical Data Files

Hyper Historian stores historical plant data to the hard disk in special archive files. By default during installation, the Hyper Historian is set up to log data to the following path: *ProgramData*\ICONICS\HyperHistorian\Data. You may specify a different storage location (directory), after installation, in which these files are created and then filed. This can be done using the Hyper Historian Configurator System Administration/System Settings screen. Be sure that you have allocated sufficient disk space for storing plant data for your desired time frame.

The amount of disk-based storage that is needed depends on the number and frequency of stored tag values. The more tags, the fewer values that can be stored per tag before archiving the oldest data becomes necessary.

The higher the specified tag storage rate, the faster you lose disk space.

Data Type Sizes:

Data Type	Size
Int8, UInt8	1 byte
Int16, UInt16	2 bytes
Int32, UInt32	4 bytes
Int64, UInt64	8 bytes
Float32	4 bytes
Float64	8 bytes
Boolean	0 bytes
String	String length * 2 bytes
Timestamp	4 bytes
Quality	1 to 3 bytes (depends on presence of sub-status code and/or history bits)

Analog and Discrete Storage Requirements

For analog and discrete tags, each value that is stored uses Storage size + 4 bytes of disk space, plus approximately 5% overhead. Use the following formula to estimate the disk usage:

> Estimated disk usage per day = (Size + Timestamp + Quality + 1) * (1 + reserve in percent / 100) * Number of tags * [Approx. number of samples per day]

For example, the disk usage per day for 10,000 Float32 analog tags (Storage Size = 4 bytes) that are stored at 10-second intervals (i.e. 6 per minute * 60 * 24 = 8,640 samples/day) would be: (4+4+1+1)*(1+(5/100))*10000*8640 which is approximately 907 MB per day.

String Storage Requirements

For strings, the number of bytes required for storage will be the actual number of characters being sent from the data source + 14 bytes, plus 5% overhead. Therefore, the average disk usage per day for a variable-length string that is receiving an average of 'N' characters per sample could be calculated using the following formula:

> Estimated disk usage per day = (Number of characters * 2) (1 + reserve in percent / 100) * Number of tags * [Approx. number of samples per day]

For example, the disk usage per day for 1,000 string tags that are changing, on average, every 60 seconds and the average incoming value is 50 characters in length would be (50*2)*(1+(5/100))*1000*1440, which is approximately 151 MB per day.

2.3 Installing Hyper Historian

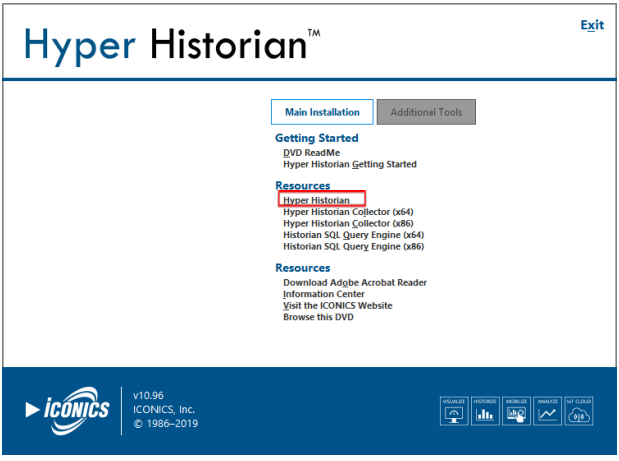
The following steps detail the Hyper Historian system installation.

Note: You cannot install any 10.9x product from Remote Desktop when using a shared drive. In such instances, it is suggested that you copy the installation's sources to a local drive or share the drive via Windows networking rather than via Remote Desktop.

Note: If your operating system requires a login name, you must log in with administrator capability before installing Hyper Historian software.

To run the Hyper Historian applications, you must be logged into the operating system with an account that is a member of the Administrators group or the Power Users group.

1. Before installing ICONICS software, be sure that all other applications are closed and/or disabled.
2. Insert the Hyper Historian product DVD into your DVD-ROM drive. If Autorun is enabled on your system, the DVD introduction starts automatically. Otherwise, browse to your DVD-ROM drive and run the **Default.hta** file.
3. An Open File – Security Warning dialog box may open, notifying you of an Unknown Publisher and asking if you are sure you wish to proceed in installing the software. Click **Run** to continue.
4. The Hyper Historian installation starts and displays the following Menu screen.



5. This screen remains open throughout the installation process. From this screen you will start the Hyper Historian installation.

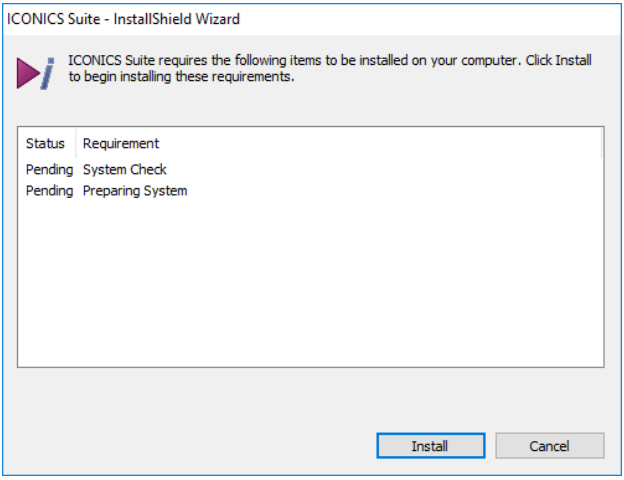
6. If you are going to run Hyper Historian on a *single machine*, click **Hyper Historian**.

   But if you are going to run a *centralized logger on one machine and remote collectors on other machines*, do the following:

   - When installing on the *centralized logger machine*, click **Hyper Historian**.
   - When installing on a *remote collector machine*, click **Hyper Historian Collector Installation 64** (or 32, based on machine) which is a subset of the larger installation. Then follow the steps provided later in this guide in the section "Installing a Remote Hyper Historian Collector."

7. If you are using a Windows Vista or newer system, you will be prompted by the User Account Control system to give permission (unless UAC has been disabled). Click **Yes** to proceed.

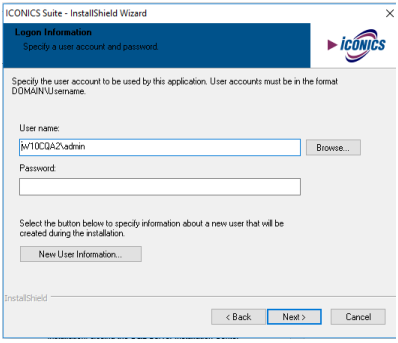
8. The wizard begins by displaying the items that it will install on the computer. It looks something like the following. Click **Install** to continue.



A series of status bars show files being extracted.

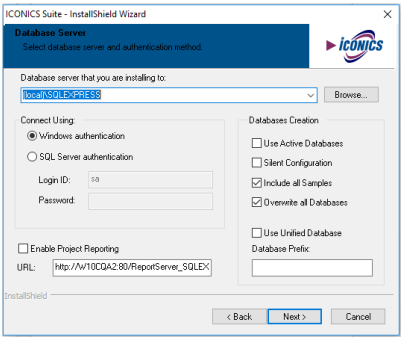
9. If Microsoft SQL Server Express is not already installed, the following dialog box appears. If you are installing Hyper Historian on a remote collector, click **No**. Otherwise, click **Yes** to begin its installation. A series of status bars show files being extracted.
10. Follow the installation instructions for installing SQL Server Express described in the ICONICS Application Note entitled "*Installing SQL Server 2014 Express".* This Application Note can be found in the Info Center on the Hyper Historian DVD.
When you are done, **close the SQL Server Installation Center**. If you were running the Hyper Historian installation, closing the SQL Server Installation Center continues the Hyper Historian installation automatically.
11. If Microsoft Internet Information Services (IIS) is not installed on the machine, you will see a message requiring installation of IIS before running the setup again.
12. Click OK, then install IIS as described in the ICONICS Application Note entitled "Installing Microsoft Internet Information Services (IIS)". This Application Note and more can be found on the Info Center on the Hyper Historian DVD. When you are done, resume at the next step.
13. The Hyper Historian installation wizard begins. Click **Next** to proceed.
14. Read the license agreement, then select **I accept the terms in the license agreement**. Click **Next**.
15. In the Setup Type screen that appears select the type of setup you wish to perform, either Typical or Custom. **Typical** installation installs most of the components of Hyper Historian and will, as an option, overwrite the supporting SQL database files or include sample displays via GenDemo.
16. **Custom** installation allows you to pick the options to be installed.

17. In the **Logon Information** Dialog, you can choose to use either a local machine account or a domain security account, as well as create a new user or use an existing user account.



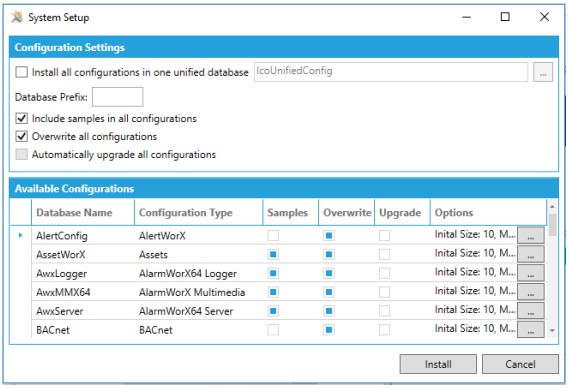
18. In the **Database Server** Dialog, you can choose the SQL Server from the dropdown list. You can select local or remote database together with database settings and authentication that is the database server secured under.

Use Active databases – Databases from previous installation of Genesis64 will be attached to this installation
Silent Configuration – Databases will be installed with selected setting and there won't be additional dialog with advanced database setting
Include all Samples – Install sample data that you can experiment with
Overwrite all Databases – Overwrite older Databases
Use Unified Database – Install all configuration in one unified database
Enable Project Reporting – Enable and setup Project Reporting on SQL server if possible (Project Reporting is supported on SQL 2008 R2 and higher)



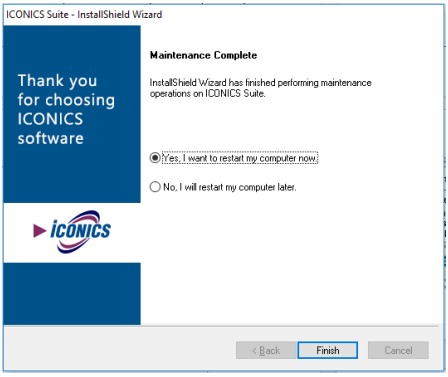
19. In the **Ready to Install the Program** Dialog box, click on Install or Cancel if you want to exit the installation.

20. The **System Setup** Dialog will now appear. You can either leave the **Include all samples** checkbox enabled (in order to install sample data that you can experiment with) or disable this checkbox to install blank tables. Advanced configuration will allow settings for additional sizing options on the database and log files. You can enable Unified database (one database that contains all the configurations) and also you can enable Overwrite all (overwrite all existing databases), or you can use Upgrade automatically all database configurations (existing databases will be automatically upgraded to the newest version).



21. Click the **Install** button to continue the installation.

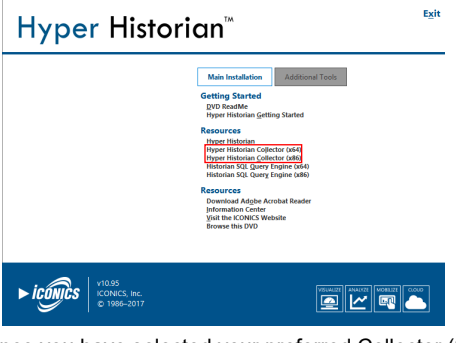
22. Once complete, you will see the following window. Click **Yes, I want to restart my computer now** to restart your computer.



2.4 Installing a Remote Hyper Historian Collector

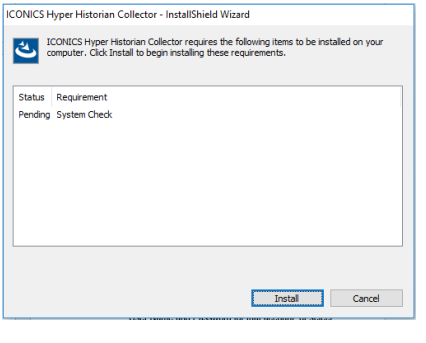
To install a remote collector on a machine, follow these steps:

1. Follow steps 1 through 4 provided earlier in “Installing Hyper Historian,” beginning on page 2-12. You will have the choice of installing either 32-bit or 64-bit Collectors from the initial install screen, as shown in the following figure.

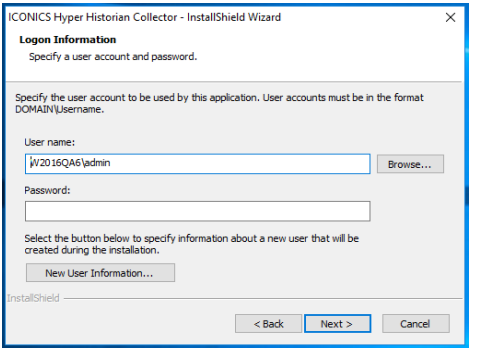


2. Once you have selected your preferred Collector (32- or 64-bit), the Hyper Historian Collector Installation Welcome screen appears. Click **Next**.

3. The wizard begins by displaying the items that it will install on the computer. It looks something like the following. Click **Install** to continue.



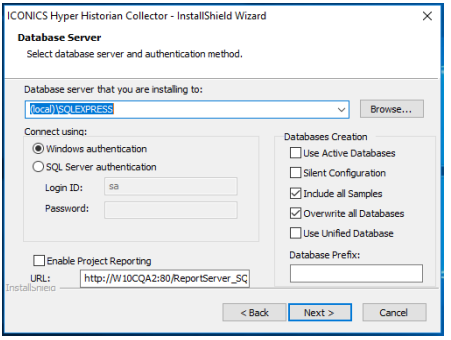
4. The ICONICS License Agreement appears. Read the license agreement, then select **I accept the terms in the license agreement**, and click **Next**.
5. In the **Setup Type** screen that appears select the type of setup you wish to perform, either Typical or Custom.
6. In the User Setup dialog box you can choose to use either a local machine account or a domain security account, as well as create a new user or use an existing user account.



Either accept the local machine account or click the **Domain** radio button and enter the domain machine account.

Either select the **New User** radio button and enter the User Name and Password for that account; or select the **Existing User** radio button and select the User Name of the account then provide the password for that account. Then click the **Finish** button.

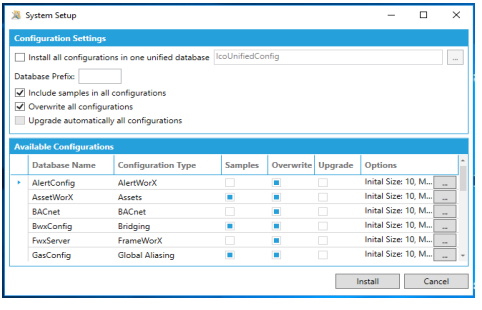
7. In the **Database Server** Dialog, you can choose the SQL Server from the dropdown list. You can select local or remote database together with database settings and authentication that is the database server secured under.



Use Active databases – Databases from previous installation of Genesis64 will be attached to this installation
Silent Configuration – Databases will be installed with selected setting and there won't be additional dialog with advanced database setting
Include all Samples – Install sample data that you can experiment with
Overwrite all Databases – Overwrite older Databases
Use Unified Database – Install all configuration in one unified database
Enable Project Reporting – Enable and setup Project Reporting on SQL server if possible (Project Reporting is supported on SQL 2008 R2 and higher)

8. The Ready to Install the Program screen appears. Click the **Install** button to install the remote collector. A status bar appears as well as a Windows Command box during the installation.
9. The **System Setup** Dialog will now appear. You can either leave the **Include all samples** checkbox enabled (in order to install sample data that you can experiment with) or disable this checkbox to install blank tables. Advanced configuration will allow settings for additional sizing options on the database and log files.

You can enable Unified database (one database that contains all the configurations) and also you can enable Overwrite all (overwrite all existing databases), or you can use Upgrade automatically all database configurations (existing databases will be automatically upgraded to the newest version).



10. When the installation is done, the User Setup wizard begins. Click **Next** to proceed. (You can ignore any extra windows that remain open; they will close when the final steps of the installation have been completed.)

11. The Wizard Completed dialog box appears. Click Finish to close the dialog box. The installation of the Hyper Historian remote collector is complete.

2.5 Uninstalling Hyper Historian

Hyper Historian software can be uninstalled (removed) from the system. It is recommended that you back up all your project-related files before uninstalling. If your operating system requires a login, you must be logged in with administrator capabilities to uninstall. Uninstalling Hyper Historian Software (or its components) does *not* remove the data historian-related SQL databases.

To Uninstall Hyper Historian:

1. Click **Start** > **Control Panel** > **Programs and Features**.
2. From the list of programs that you can remove, select **ICONICS Hyper Historian**.

3. Click **Uninstall** in the top navigation bar to remove Hyper Historian and all of its components.
4. A confirmation dialog appears asking if you are sure you wish to uninstall the application. Click **Yes**.

The Windows Installer then removes Hyper Historian and all related components and services. A dialog box may appear notifying you of any related running applications that should be closed before continuing removal of Hyper Historian.

3 HYPER HISTORIAN CONFIGURATION

3.1 About the Hyper Historian Configuration Workbench

Hyper Historian is configured through the Workbench, an integral part of Hyper Historian and ICONICS' GENESIS64 64-bit, OPC-integrated, Web-enabled HMI/SCADA suite. Workbench is loaded as part of the Hyper Historian installation and is a multi-functional, centralized, web-based environment for product configuration.

The Workbench can also act as an advanced operator interface for visualization and service management and has integrated layout/project management and remote, pack-and-go deployment capabilities.

3.2 Starting the Hyper Historian Configuration Workbench

If you wish to launch directly from your desktop, click **Start**, then **All Programs,** then select **ICONICS Product Suite > Workbench** from the list.

If you already have a component running with Workbench, select **Historical Data** > **Hyper Historian**.

3.3 Using the Hyper Historian Configuration Workbench

Starting and Stopping the Hyper Historian Logger

The Hyper Historian Workbench contains a stoplight icon in the ribbon that lets you start or stop the Hyper Historian service.

If you are using Hyper Historian Standard Edition, the stoplight will start or stop the high-speed, in-process version of the Hyper Historian Logger and Collector. If you are using Hyper Historian Enterprise Edition, by default the stoplight will start or stop the OPC UA-based Hyper Historian Logger and Collector, which allow for remote data collection and redundancy support.

Users of the Enterprise Edition also have the option of running the In Process version of the Logger and Collector, if redundancy and remote data collection are not required.

Configuring the Hyper Historian Logger to AutoStart

From within the Workbench, select your project name in Project Explorer, then click the **Configure Services** button or icon in the **Home** tab. Scroll to the ICONICS Hyper Historian Logger service, and change the Start Mode to Auto. Other options are Manual, Auto (Delayed) and Disabled.

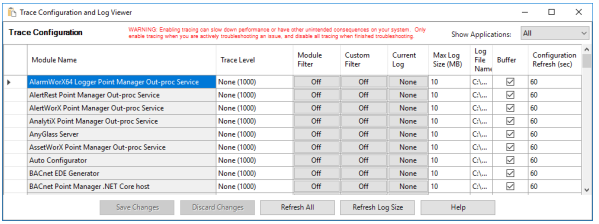
Next to the Start Mode column is the Status column which can be in Running, Stopped, or Start (Pending) modes. To change the Status of a service, click the traffic light icon in the left column. You have the option to either **Start** or **Stop** the Status.

Viewing Licensing Information

In the Hyper Historian Workbench, you can see the License Viewer by clicking the **Licensing** button in the **Tools** menu. The License Viewer tab then appears in the Workbench.

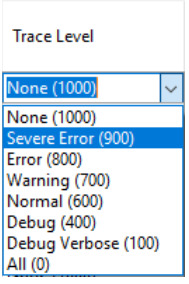
Using TraceWorX

To enable TraceWorX, click the **TraceWorX** button in the **Tools** menu. The TraceWorX window appears, as shown below. You can then select trace levels for each of the available modules.



Configuring TraceWorX

To configure TraceWorX, select the trace level for the intended module. There are several trace levels, show in the image below.



Viewing TraceWorX Generated Log Files

To view TraceWorX generated log files, go to the Current Log tab by clicking the button in the **Current Log** column and selecting **View Log**. A separate window opens showing the log files that are contained in that module.

3.4 Initial Hyper Historian Setup

Before using the Hyper Historian for the first time, you should use the **Historical Data** > **Hyper Historian** > **System Administration** > **System Settings** > **File Logger** tab to set:

- Data Store Directory
- Archive Data Store Directory

The Data Store Directory is the location where the Hyper Historian stores the plant data it collects. The default folder for the Data Store Directory is C:\ProgramData\ICONICS\HyperHistorian\Data\ Data Logger.

It is important to change this default path, especially if the C: drive has a low amount free storage space.

The Archive settings tell the Hyper Historian whether it is to automatically detach older data from the system, and if it is to remove the old data, the folder location it should move this data to.

The rest of the system settings have default values that facilitate the initial start-up and operation of the Hyper Historian. For more information on the other settings, refer to “Configuring System Settings” on page 3-35 of this guide.

3.5 Hyper Historian Tag Organization

The primary element for the grouping of tags is the ***logger***. For each logger that is created, Hyper Historian creates a series of similarly named binary files to hold the plant historical data. The file creation and automatic archiving functions are based on the logger. You may create multiple loggers.

Before you begin, analyze the data you want to collect and how long you want the data to be kept online in Hyper Historian. Data that is kept online for longer periods of time should be grouped together in one logger. Data that is to be kept online for shorter periods of time should be grouped in a second logger, and so on. For example, if you want to have some data kept online for a year, some data for three months, and some for one month, you should create at least three loggers, one for each of the desired time ranges.

Loggers are made up of one or more ***logging groups***. Each logging group may contain one or more ***collector groups*** and/or ***aggregate groups***. The collector and aggregate groups are made up of ***tags***, whose data is to be logged. **Note:** Logging groups can be enabled or disabled using the Configurator, and can be enabled or disabled online as well.

3.6 Configuring a Hyper Historian Logger

To add a new logger, drill down **Historical Data** > **Hyper Historian** and right-click the **Loggers & Groups** section and select **+ Logger**. Each Logger creates a data file on the hard drive to store the collected plant data.

You will need to specify the conditions for when the Hyper Historian should create a new data file and close the current, existing file. This is used to control the amount of plant data or the time frame for the plant data that should be logged to each file. The conditions can be based on a time period, file size or a Unified Data Manager triggered event.

The Unified Data Manager (UDM) can be used to schedule the creation and closing of files based on calendar (date) and Time of Day. In addition, the UDM can be used to trigger file closure based on an external event. To use a UDM trigger to schedule or trigger the file creation, browse for the UDM triggers using the ellipsis button […] on the right side or type in the specific trigger name.

Refer to the Hyper Historian online Help for more information about how to configure a Disk Logger and set up archiving for it.

Deleting a Hyper Historian Logger

Before deleting a Hyper Historian Logger, you should first verify that there are no Logger Groups using the Logger that is to be deleted. If any Logger Groups are assigned to the Logger, they need to be deleted or assigned to another Logger first.

Once you delete a Logger, the data that was previously logged as part of the group will no longer be available for playback in the trend display nor in the SQL Query Interface.

To delete a logger, right-click it, and then select **Delete** from the menu. You will see a confirmation dialog box prompting you to proceed.

Managing Data Storage

Backing Up the Hyper Historian Configuration Database

It is highly recommended that you back up all of the Hyper Historian and SQL databases in the following circumstances:

- Before you make any changes to the database, in case you want to return to the original configuration.
- On a regular schedule, to minimize data loss in the event of a disk failure. The best way to perform database backups is to set up automatic backups using SQL Server Management Studio. You should back up your database at least once a week.

When you perform a database backup, all system tables, user-defined objects and data are copied to a separate file located on a backup device. Backup devices include disk files, floppy diskettes, zip disks, and tape drives. Backups can be easily managed using the SQL Server Management Studio. The master and msdb databases should be on the same backup schedule as the Runtime database.

Backing Up the Database

Note: Any transactions that are in progress when the backup is performed are rolled back if that backup is later restored.

To back up the database

1. In Microsoft SQL Server Management Studio, expand **Databases** and select **Hyper Historian**.

2. Right-click the **IcoUnifiedConfig** (or however you named your database) database, point to **Tasks**, and then click **Back Up…**. The **Back Up Database** dialog box appears.
3. Click the **General** tab. In the **Database** box, select **IcoUnifiedConfig**.
4. To use an existing backup device or file for the backup, select the destination in the **Destination** area and then click **OK** to begin the backup.

   For details on a particular backup destination, select the destination in the list and then click **Contents**.

5. If you do not have a backup destination defined, click **Add** to add a new destination. The **Select Backup Destination** dialog box appears.

6. Select to back up to either a file or device.
   - To back up to a **file**, type or browse to a path for the location of the backup file. Be sure that you have enough free disk space to store the backup.
   - To back up to a backup device, select an existing backup device or select **<New Backup Device>**. The **Backup Device Properties** dialog box appears. In the **File name** box, type a name for the device. As you type the name, the path for the backup will be modified.
   - Verify that the path for the backup is correct. When you are done, click **OK** to create the backup device.
7. Click **OK** to close the **Select Backup Destination** dialog box.
8. The newly-created backup device now appears in the **Destination** window of the **SQL Server Backup** dialog box. Select the new backup device.
9. Click **OK** to perform the backup.

You can configure various options for database backups, such as an expiration date for a backup. You can also schedule automatic backups.

For a complete description of database backup and restoration using SQL Server Management Studio, including scheduling recommendations and transaction log backup, see your SQL Server Management Studio documentation.

3.7 Configuring a Hyper Historian Logging Group

To edit or add a new Hyper Historian Logging Group:

1. Drill down **Historical Data** > **Hyper Historian** and right-click the **Loggers & Groups** section and select the Logger for the group. Then click **+ Add Logging Group**. Enter the **name** of the Logging Group.
2. Ensure the **Enabled** checkbox is checked.
3. Select the Logger that this Logging Group is to belong to from the **Snapshot Logger** drop-down list.
4. Click the **Apply** button.

3.8 Configuring a Hyper Historian Collector Group

To edit or add a new Hyper Historian Collector Group:

1. Drill down **Historical Data** > **Hyper Historian** > **Loggers & Groups** and select the Logger and Logging Group for the Collector Group to be created. Then click **+ Add Collector Group**. Enter the name of the Collector Group.
2. Select the Collector from which this Collector Group is to get its data from the drop-down list.
3. If the **Collector overwrites Source Timestamp of data with its actual UTC time** is checked, the Hyper Historian logger applies its own time stamps to the collected data instead of using the time stamps provided by the OPC Server. This feature can be used if the OPC Server cannot provide accurate or reliable time stamps.
4. Specify the Data collection rate. The data collection rate is the rate at which the Collector collects the raw data samples from the data source.
5. Specify the Calculation period. The Calculation period is the frequency of which the Collector is to perform its Advanced Filtering calculations for the tags within this group. (For more information on the Calculation period, see “Log to Disk Configuration” later in this section.

6. If you wish to set a **Collecting Condition**, click the **Collect On Condition** checkbox. The condition can be based on a Unified Data Manager trigger. To select a UDM conditional trigger, browse for the trigger by clicking the ellipsis button […] on the right side, or type in the trigger name.
7. Enter the Description of the Collector Group.
8. Click the **Apply** button to save the changes.

The **Refresh** button refreshes the screen with the current configuration settings for the collector group by reading it from configuration database.

Once the Collector Group has been created, you can access further options by right-clicking the group in the left-side navigation pane. Options include Edit, Delete, Paste, Cut, Copy, Multiply, Refresh, and Refresh Parent.

3.9 Configuring a Hyper Historian Tag

To edit or add a new Hyper Historian tag to collect data from a signal:

1. Select the **Data Collections** section of the Hyper Historian Project Explorer and click **+ Tag** to add a tag. This opens the New Tag tab.

   To create a folder of tags, click **+ Folder** instead. There are also buttons to add specific types of tags, calculated conditions or events, or add multiple tags at once.

2. Enter a name for the tag.
3. Select the signal to be logged by clicking the ellipsis button […] to the right of the **Signal Name** field and browsing for the tag whose data is to be logged.
4. Enter a **Description** for the tag.
5. Select the Collector Group this tag belongs with in the **In Group** field.

6. Select the **Data Type** from the next drop-down list. Options include: Native, Boolean, Int8, UInt8, Int16, UInt16, Int32, UInt32, Int64, UInt64, Float32, Float64, String, DateTime, and Duration.

   Note: Hyper Historian requests the selected data type from the data source (that is, the OPC server). The UInt64 and Float64 data types are not supported by OPC DA Servers running on Windows 2000.

7. Click the **Support Operator Comments** to enable this feature if it is desired.
8. Select the **Stepped Interpretation** option if desired.
9. Enter the **Engineering Units**.
10. Enter the ranges for the **Range** in the provided text entry fields. Note, these limits are used by the filter algorithms. For more information, see the “Deadband Filter Configuration” and “Swinging Door Filter Configuration” sections (on page 3-12) for information on how the limits are used.
11. If desired, apply **Filtering** to the tag by selecting either **Deadband** or **Swinging Door** in the **Filter Type** dropdown menu.
12. If you enabled a **Deadband** filter, select the type of deadband filter to be used (Absolute or Percentage) and enter the filter setting.
13. If you enabled a **Swinging Door** filter, enter the Threshold settings and the Period settings.
14. Open the **Logging Options** tab of the dialog and select the **Aggregate Type** option. You can request that all collected raw samples be logged, or you can alternatively request the Hyper Historian to perform an advanced filter. The Advanced Filter options include Moving Minimum, Moving Average and Most Recent On Time.

    If you choose an advanced filter such as the Moving Average, the Hyper Historian collector will perform the Moving Average calculation on the raw samples over the defined calculation period (defined when setting up the Collector for the tag). The result of the calculation will be logged at the end of each calculation period.

15. The **Aggregates** tab is described later in this section where aggregate folders and aggregate tags are described. For information about the **Tag Logging Options** tab, refer to the Hyper Historian online **Help**.
16. Click the **Apply** button to save the changes.

Logging Options Configuration

The Logging Options configuration allows you to specify if all samples collected by the Collector are to be logged to disk or if the collector is to aggregate samples instead. The Aggregate Type options include:

- All Samples
- Max (Maximum)
- Min (Minimum)
- Avg (Average)
- Std. Dev (Standard Deviation)
- Running Max
- Running Min
- Running Avg
- Moving Avg
- Moving Max
- Moving Min
- Totalizer
- Most Recent On Time

The calculation period for the Aggregate Type is specified in Collector group configuration.

Deadband Filter Configuration

The Deadband filter is performed by the Collector on incoming data. It serves as the front-line for all of the filtering logic. The deadband filters out values based on difference of values of consequent changes – if the difference is below a defined threshold, new value is ignored.

Parameters:

Deadband configuration is straightforward:

- It can be either disabled or enabled
- If enabled, it is possible to configure its range
  - As an absolute value (non-negative)
  - As a percentage of value range (max - min) defined for the tag

  Note that the value configured is the minimum difference between values to allow subsequent values to become a “base value” for deadband ranges. Actual range around base value spans both up and down.

Swinging Door Filter Configuration

The Swinging Door filter is a generalization of a deadband filter. It is implemented by the Logger on incoming values it receives from the Collector. It serves as the last-line of the filtering logic. The swinging door filters values based on difference of later values based on a linear trend – if the difference is below a defined threshold, any new values are ignored.

Detailed operation

Swinging door filters values that follow certain linear trends. It starts with one value (the first one is always forwarded to storage).

Two tangents are considered, originating above and below the base value in a defined filter range. Tangents are effectively defined by second value in filter (see the example on page 3-14). As the Logger processes subsequent values, the tangents are adjusted to form a geometrical region encompassing all values in filter so far.

Geometrically, as long as tangents don’t intersect prior to the base value (i.e. the region defined by tangents is not broadening – hence the commonly-used filter name), the filter is valid.

When new value causes the region to open up, the filter is flushed – the last value prior to breaking one is dumped to storage and the filter is reinitialized using that value and the breaking one.

There are certain guarantees about the maximum deviation of filtered values (the difference of ignored values from the stored trend can't be higher than the distance between points used to draw tangents above and below the base point, for example).

Parameters: Filter configuration is similar to deadband's:

- It can be either disabled or enabled
- If enabled, it is possible to configure its range
  - As an absolute value (non-negative)
  - As a percentage of value range (max - min) defined for the tag

Besides these parameters, there are two additional ones:

- Minimum distance between values
  - If two subsequent values are closer (time-wise) than defined threshold, the new value is ignored
- Maximum distance of values
  - If the distance between the last stored value (physically) and an incoming value is higher (time-wise) than defined threshold, the filter is flushed as if the new value would be one to break the filter.

Calculated Tags

In Hyper Historian, you can use calculated tags and calculation triggers to configure complex calculations. You can use performance calculations to provide totals over time or statistics for analysis. These calculations are performed only on historical data stored in Hyper Historian. You can also use these calculations for setting up alarms or faults for certain conditions that may occur over time.

For example, you may want to schedule maintenance for a machine every 10,000 hours of run time or every 1,000 cycles. In this case, you can create a calculation tag that calculates the amount of time the tag is in the TRUE state, and another calculation tag that counts the number of times the machine has been switched on. A third calculation tag can monitor the incoming values for the first two tags, and can generate an alarm when a predetermined threshold has been reached for maintenance.

Performance calculations can be triggered periodically or on any data change event, using a flexible new date/time and many different mathematical, string and historical data retrieval functions that are part of the ICONICS Expression Editor. Calculations can use scalar values, historical values, or string operations, along with a wide variety of functions within an enhanced version of the ICONICS Expression Engine, and results are calculated automatically on each trigger, or can be recalculated manually on demand.

Calculated tags take as their input normal incoming values from Hyper Historian tags and perform calculations on historical data. The results of these calculations are stored in the Hyper Historian database. You can nest calculated tags so that they can be used as input to other calculated tags. These calculations are triggered using calculation triggers -- these are triggers that are created specifically for use with calculated tags. Calculation triggers are different than regular triggers because they can point to historical dates and times, whereas regular triggers cannot.

Calculation triggers also make use of special functions that are available only to them, for use with calculation tags.

Configuration of a new Performance Calculation tag is easy. Simply add a new Calculated Tag in the existing hierarchical structure of the Hyper Historian Workbench configurator; you can organize calculated tags in folders and subfolders.

Each Performance Calculation appears as a new tag in the Hyper Historian browser, and can therefore be accessed, replayed, analyzed, and reported on just like other Hyper Historian data values.

Hyper Historian offers several preconfigured calculations out-of-the-box such as standard deviation and variance, and you can customize your own Performance Calculations using the Expression Editor, with equation parsing and syntax checking.

To configure calculated tags you must do the following:

- Add calculated tags to the folders where you store your Hyper Historian tags.
- Create calculation triggers that will execute the calculations, and add these triggers to your calculated tags.
- Set up recalculation options in the System Administration node.

Configuring a Calculated Tag

To create a calculated tag in Hyper Historian, follow the steps on the following pages. Each calculated tag that you create will store calculated values in the Hyper Historian database. You will be creating the calculated tag in the folder where the Hyper Historian tags you will be using as input are located. This is for organizational purposes only.

The calculated tags that you create can reside anywhere in the Data Collections node. In fact, you can put them into a folder of their own if you like.

1. In the Workbench, make sure you are looking at the Hyper Historian provider. Expand the Data Collections node so that you are in the folder where you want to create the calculated tag.

2. Right-click the folder where would like to add a new calculated tag, and select **Calculated Tag**, as shown below. This opens the Calculated Tag window with the Properties tab on top.

3. In the Hyper Historian Calculated Tag form that opens (shown in the following figure), enter a name and display name for the calculated tag.

   Leave the **Enabled** checkbox unselected until you are ready to begin using the calculated tag. Enter a description that describes how the calculation is used; include information that will be helpful for later maintenance of the tag.

4. Put a check mark next to **Stepped interpretation** to enable this feature if it is desired. The Stepped Interpretation check box is used primarily during playback, for interpreting the tag's data values. This feature is applied only if you request a value for a certain point of time. The returned value will be the nearest older value available. In general, if the data comes from a discrete signal such as an on/off switch (or a Boolean data type), put a check mark in this box; but if data comes from a sine wave or analog signal, leave the box empty.
5. You can optionally put a check mark in the **Support Operator Annotations** check box to allow operators to comment on the signal in displays. Later, as the tag's data values play or replay in the Trend Viewer, you may want to be able annotate the tag's data values as you see them trending before you. For example, you may want to note an operator action that altered the data slightly, or highlight a piece of data for analysis later. Putting a check mark in the Support Operator Annotations check box allows you to do that. Such annotations are saved with the tag's data in its logger file, which makes the annotations available in a replay, accessible to the Hyper Historian SQL Server Interface, and archived with the tag's data.

6. Select the data type from the **Data Type** drop-down menu. Among the options available to you are: Native, Boolean, Int8, UInt8, Int16, UInt16, Int32, UInt32, Int64, UInt64, Float32, Float64, String, DateTime, and Duration.
7. Enter the **Range** of acceptable values for the data. These values are used by the filter algorithms to remove anomalous data.
8. Enter the **engineering units**.
9. In **Min. Sample Distance**, specify the minimum amount of time between samples. This option is helpful for limiting samples from high-frequency sampling.
10. In the **Triggers** section, add the triggers that determine when the calculations will occur. The triggers that you can add here are calculation triggers that must be predefined as described in the "Creating a Calculation Trigger" topic that follows. Note that you can use the **Up** and **Down** buttons (on the right) to sequence triggers in the list. The sequence becomes important only when two triggers execute at the same time; the trigger that is higher in the list will execute first.
11. Now go to the **Expression** tab to create an expression for the calculation. This expression may include the following:
    - The **tag or tags** whose data is to be used as input to the calculation. This can include values from Hyper Historian tags and signals as well as values from other calculated tags. Clicking the **Variables** button will open a dialog box that lets you choose any tag that is in the Hyper Historian tree in Project Explorer.
    - The **historical time frame** from which data is to be taken. The time frame should be relative to the execution date and time determined by the triggers. Do not hard code dates into the expression unless you always want those exact dates to be used for the calculation.
    - Any **additional selection criteria** to be used.

- The **calculation** to be performed. Click the **Arithmetic**, **Relational**, **Logical**, **Bitwise**, and **Functions** buttons to incorporate syntactically correct elements into the calculation. Note that a number of functions that are specific to calculated tag logic have been developed for use.

12. Click the Syntax button at the bottom of the window to check the logical syntax of the expression. Make any necessary corrections.
13. When you are satisfied with the calculation, make sure you put a check mark in the **Enabled** check box.
14. Click **Apply** when you are done.
15. At this point you can test the calculated tag to make sure the expression is calculating the result you are looking for.

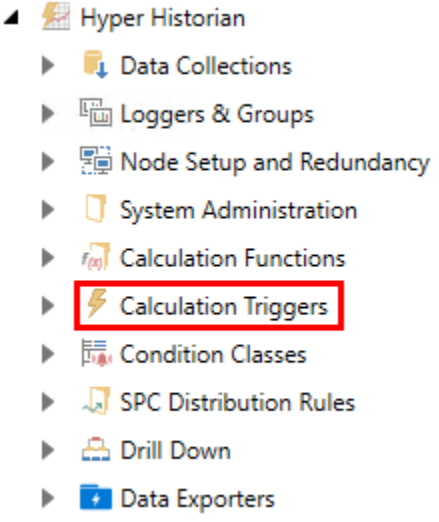
Creating a Calculation Trigger

In Hyper Historian, you create calculation triggers that cause the Performance Calculation Engine to evaluate calculated tags. (For more about calculated tags and their use, refer to the previous Calculated Tags topic.) Once you have created a calculation trigger, you can add it to the calculation tags for which it will execute calculations.

Calculation triggers are much like regular Unified Data Manager (UDM) triggers except that they are designed to work with historical data. This topic describes how to create time triggers and data triggers for use with Hyper Historian calculated tags.

As you can see in the figure below, calculation triggers get their own **Calculation Triggers** node in the Hyper Historian tree structure in the Workbench Project Explorer. This is where you will create and store the calculation triggers that you create for executing calculations for calculated tags.

In the Calculation Triggers node, notice that Periodic triggers are identified with a clock icon, and Sample Triggers with a "X=" icon. This topic describes Periodic Triggers for Calculated Tags and Sample Triggers for Calculated Tags.

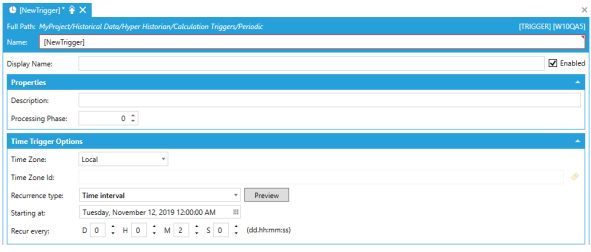


3.10 Periodic Triggers for Calculated Tags

A Periodic trigger defines specific times at which the trigger is to fire. When you add a Periodic trigger to a calculated tag, the tag's calculations fire at the times indicated by the Periodic trigger. The calculated tag can have any number of triggers associated with it, but a trigger must be enabled in order to fire. If it is not enabled, it won't fire.

To create a Periodic trigger for calculated tags in Hyper Historian, follow these steps:

1. In the Hyper Historian Project Explorer in the Workbench, expand the tree so you can see the **Calculation Triggers** node.
2. Right-click the Calculation Triggers node and select **+ Time Trigger**. The Hyper Historian Time Periodic form opens, as shown below.



3. Enter a name and display name. Enter a description that aptly describes the trigger and how it is used.
4. Enter a **Processing Phase**, which determines this trigger's relative priority in the event that multiple triggers are activated at the same time.
5. Specify whether the trigger runs based on **UTC** time or **local** time on the server.

6. For the **Recurrence Type**, specify whether you want the trigger to run at a specified **Time Interval**, or on **Specific Dates and Times**. For more information, refer to the Time Trigger Options topic for the UDM.
7. Click the **Preview** button to see a display of the exact times at which the time trigger will fire.

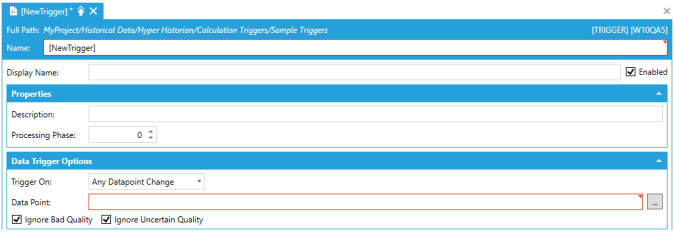
   Previewing the times is helpful if you are configuring a complex recurrence pattern; it can help you to understand whether you have configured it properly or not.
8. When you are done, make sure that the **Enabled** check box is checked and click **Apply**.
9. Now you can associate the trigger with a calculated tag as described in the process for “Configuring a Calculated Tag” above.

3.11 Sample Triggers for Calculated Tags

When you add a Sample Trigger to a calculated tag, the tag's calculations fire when the value of a data point equals a specified value or condition. For example, it can fire when a machine switch gets set to on, or TRUE. A calculated tag can have any number of triggers associated with it, but a trigger must be enabled in order to fire. If it is not enabled, it won't fire.

To create a Sample Trigger for calculated tags in Hyper Historian, follow these steps:

1. In the Hyper Historian Project Explorer in the Workbench, expand the tree so you can see the **Calculation Triggers** node.
2. Right-click the **Calculation Triggers** node and select **+ Data Trigger**. The Hyper Historian Sample Trigger form opens, as shown in the following image.



3. Enter a name and display name. Enter a description that aptly describes the trigger and how it is used.
4. Enter a **Processing Phase**, which determines this trigger's relative priority in the event that multiple triggers are activated at the same time.
5. In the **Trigger On** drop-down list, choose the condition in which the trigger is to fire. The trigger can fire upon **Any Datapoint Change** or using an **Expression** in which you can specify any condition to execute the trigger. For more information about creating an expression that fires, refer to the "Expression Editor" topic in your Hyper Historian online help documentation.
6. In the **Data point** field, specify the tag for the data point to be tested by the trigger.
7. Specify whether you want to ignore **Bad** or **Uncertain** quality tags.
8. When you are done, make sure that the **Enabled** check box is checked and click **Apply**.
9. Now you can associate the trigger with a calculated tag as described in the process for "Configuring a Calculated Tag".

Organizing Tags into Folders

A Hyper Historian folder can be useful to gather individual Hyper Historian Tags. To add a new folder:

1. Right-click a **Data Collection** and select **+ Folder**.
2. Enter a name in the text entry field and a description.
3. Click **Apply** or **Refresh** to proceed.

You can now create a Hyper Historian tag on the same level of the Data Collection or within a newly created Hyper Historian folder. Right-click either a data collection or a hyper historian folder and select **Tag** to proceed.

3.12 Configuring a Hyper Historian Aggregate Group

In this version of Hyper Historian, an aggregate group represents an interval for collecting data from one or more OPC tags in a logging group. For example, you may have a logging group for which you want to collect data every 2 minutes, every 30 minutes, every 12 hours, at the end of each day, and at the end of each week – so you would create an aggregate group for each of these time intervals.

To edit or add a new Hyper Historian Aggregate Group:

1. To add an Aggregate Group, navigate to the **Loggers & Groups** area in the Hyper Historian Project Explorer, right-click the Logging Group, then click **+Aggregate Group**.
2. Enter the name of the Aggregate Group.
3. Specify the **Calculation Period**. The calculation period is the interval at which of which the Hyper Historian Logger is to perform the aggregate calculation.
4. Specify the **Percent Good** amount that the data must satisfy for the aggregate to be considered “good,” as well.
5. Decide whether you want to treat uncertain data points as bad.

6. Enter a **Description** of the Aggregate Group.
7. Click the **Apply** button to save the changes.

3.13 Configuring a Hyper Historian Aggregate Tag

Behavior of Aggregate Tags

Hyper Historian provides functionality to evaluate OPC HDA aggregates of managed tag data on the fly – each such configured evaluation is called an ***aggregate tag***. An aggregate tag is defined in the tag configurator using the **Aggregates** tab; here you simply define the aggregate groups to be used for an OPC tag. (Aggregate tags no longer appear as nodes in the navigation tree.)

The aggregate tag's name is generated automatically, using the aggregate evaluation properties (the name of aggregation type and the sampling rate) that you define for it. The aggregate name abbreviates these properties, so a longer, more descriptive Display Name is available, too.

When a new aggregate tag is defined, its values may get evaluated backwards as well, depending on the value of ancestor sampling group's property "recalculate all"; however, changing the property value has no effect on currently defined tags.

You have the option of disabling an existing aggregate tag's evaluation so that its value changes are ignored. Note that a disabled aggregate tag can be re-enabled again at any time.

Evaluation of Sampled Data

The Aggregate Tag evaluation runs in the background independently, and its results are stored in the Hyper Historian logger based on the parameters defined for it. The evaluation abides to simple rules:

- Evaluation logic monitors incoming data values and reevaluates aggregates whose values might change as a result of changed source data.

- The evaluation is performed periodically on specified time intervals where data is detected as *changed* since the last evaluation; the initial evaluation of an interval occurs with at least a 1 minute delay.
- Sampling intervals are aligned to the nearest earlier occurrence of the nearest higher time bin boundary. For example, a sampling rate of seconds yields sampling intervals aligned to a minute – having a sampling rate of 5 seconds yields intervals starting at +0, +5, +10…+55 seconds within a minute.
- Note, however, that sampling rate value that is not a divisor of the given time bin may yield anomalies in sampling interval alignment during re-evaluations. For that reason, you should restrict available sampling rates to divisors.

Aggregate Tag Configuration

To edit or add a new Hyper Historian Aggregate Tag:

1. Double-click the Hyper Historian tag for which you want to define aggregates. The tag's configurator opens.
2. Select the **Tag Aggregates** tab. Here you can define any number of aggregates to be collected for the Hyper Historian tag. For each aggregate, specify the information described in the steps that follow. Note that an informative **Aggregate Name** and longer **Display Name** are generated for you automatically.
3. Select the **Enabled** check box to collect data for the aggregate.

4. Select the **Aggregate Type**. The following types of aggregates are supported by the Hyper Historian:
   - Annotation Count
   - Average
   - Count
   - Delta
   - Delta, with bounds
   - Duration Bad
   - Duration Good

- End
- End, with bounds
- Interpolative
- Maximum
- Maximum Actual Time
- Maximum Actual Time, with bounds
- Maximum, with bounds
- Minimum
- Minimum Actual Time
- Minimum Actual Time, with bounds
- Minimum, with bounds
- Number Of Transactions
- Percent Bad
- Percent Good
- Population Standard Deviation, N
- Population Variance, N
- Range
- Range, with bounds
- Sample Standard Deviation, N-1
- Sample Variance, N-1
- Start
- Start, with bounds
- Sum
- Time Average, with bounds
- Time Average, with complex bounds
- Total
- Total, with bounds
- Worst Quality
- Worst Quality, with bounds

5. Select the **Aggregate Group** that has the calculation interval you want to use for the aggregation. If you don't see the group you are looking for in the drop-down list, click the **Refresh Aggregate Groups** button, then try again. The Aggregate Group must be created before it can be selected.

6. You can optionally set an override (in hours, minutes, and seconds). To do so, put a check mark in the **Override Calculation Period** check box in the **Logging Options** tab and set the hours, minutes, seconds and/or milliseconds for the override.
7. Click the **Apply** button to save the changes.

3.14 SPC Configuration in Hyper Historian

For Quality AnalytiX customers, SPC configuration is included in your installation of Hyper Historian. This enables you to configure rules and tags related to SPC charts that monitor the capability and reliability of your system. You first configure *rules* that you then apply to specific *tags* that you configure for display in SPC and histogram charts.

For more in-depth instructions regarding the configuration of SPC distribution rule sets and tags, consult your online documentation for Hyper Historian or Quality AnalytiX.

Configuring SPC Distribution Rules

To configure an SPC distribution rule in Hyper Historian:

1. Navigate to the SPC Distribution Rules area of the Hyper Historian Project Explorer.
2. Right-click the “SPC Distribution Rules” folder and select **+ SPC Distribution Rule Set**.
3. Enter a name and a description for the rule set.
4. In the **Rules** area, click the “Enabled” check box to add a rule to the rule set.
5. Specify one of the following rule types:
   a. Outside Sigma Limit
   b. Outside Upper Sigma Limit
   c. Outside Lower Sigma Limit
   d. Outside Sigma Limit Single Side
   e. Trending
   f. Trending Up
   g. Trending Down
   h. One Side Of Center Line

i. Above Center Line
j. Below Center Line
k. Within Sigma Limit
l. Alternating
m. Alternating Lower Sigma Limit

6. Enter a number of total values, a violation count, and sigma total (NSigma) associated with your rule.
7. Press the **Up** and **Down** arrow buttons to adjust the relative priority of the rules in the rule set. Rules appearing closer to the top of the chart receive higher priority.

Configuring SPC Tags

To configure a tag for use in SPC charts and reports:

1. Navigate to the Data Collections area in the Hyper Historian Project Explorer.
2. Right-click the folder that should contain the SPC tag and select **+ SPC Tag**.
3. Give the SPC tag a name, an optional display name, and a description.
4. In the Properties section, select the logging group and data source that should be associated with this SPC tag.
5. In the Properties section, select the SPC distribution rule set that this tag should follow.
6. In the Properties section, select the summary statistics **Collection Type** for the tag. For this example, choose MedianR to see all possible settings.
7. In the Properties section, set the **Hi Limit** and **Lo Limit** for the chart displaying data from this tag.
8. In the Properties section, specify any triggers that, when activated, cause the tag to associate incoming data from the data source with a new group of values.
9. In the Control Limits tab, specify whether the control limits associated with this tag should be constant values or based on the tag's data.

10. In the Statistics tab, specify the types of summary statistics that Hyper Historian should calculate for this SPC tag.

3.15 Configuring a Trigger

Starting Triggers

If you already have a component running with Workbench, navigate to **Triggers** or **Actions** > **Triggers**.

Creating a Trigger

To create a new trigger, expand the **Triggers** selection (next to the lightning bolt icon) to show the trigger options.

Configuring a Data Trigger

1. To add a new Data Trigger, right-click **Data Trigger** and then click **+ Data Trigger**.
2. Ensure the **Enabled** checkbox is checked.
3. Enter the **Name** for the trigger.
4. On the Basic tab, enter the optional **Description**.
5. On the Basic tab, select the Trigger type. The following types are supported:
   - On any data change (event)
   - When data tag changes to TRUE
   - When data tag changes to FALSE
   - While data tag is TRUE
   - While data tag is FALSE
6. On the **Basic** tab, select the data tag that is to be monitored and used as the basis for the trigger. You can browse for the tag or type in (or copy in) the tag name.
7. On the **Advanced** tab, enter any of the optional advanced trigger conditions, as desired or needed. The (optional) advanced conditions include:
   - Time zone (either local server time or UTC)
   - Start time for monitoring the data tag
   - Stop time for monitoring the data tag
   - Trigger delay

- Trigger repeat function
- Trigger enable tag (the trigger is active only when this tag is TRUE)

8. Click the **Apply** button to save the changes.

Configuring a Time Trigger

1. To add a new Time Trigger, right-click **Time Trigger** and then click **+ Time Trigger**.
2. Enter the Name for the trigger.
3. Ensure the Enabled checkbox is checked.
4. On the **Basic** tab, you may enter an optional Description.
5. On the **Basic** tab, select whether or not the time trigger is to be a condition or an event. If it is a condition, the Trigger tag will remain TRUE for the specified duration time.
6. On the **Basic** tab, select the Recurrence type. The types include:
   - One time only
   - Time interval
   - Specific dates and times
7. If the Recurrence type is **One time only**, select the date and time the trigger is to occur.
8. If the Recurrence type is **Time Interval**, select the starting date and time, and the Recur interval.
9. If the Recurrence type is **Specific dates and times**, select the Recur interval. Note, depending on the units selected for the Recur interval, you will be prompted with different Recurrence details to enter.
10. On the **Advanced** tab, enter any of the optional advanced trigger conditions, as desired or needed. The (optional) advanced conditions include:
    - Time zone (either local server time or UTC)
    - Stop time for the Time Trigger execution
    - Trigger delay
    - Advance notification
    - Trigger enable tag (the trigger is active only when this tag is TRUE)
11. Click the **Apply** button to save the changes.

3.16 Node Setup and Redundancy

The Hyper Historian installation initializes the Node Setup and Redundancy configuration. Its default settings are for a non-redundant single workstation setup (that is, a non-redundant Hyper Historian logger with one local collector).

Use the Node Setup and Redundancy configuration to perform any of the following changes:

- Change the name or description of a collector or logger
- Add or delete remote collector(s) (Enterprise Edition)
- Specify the redundancy settings for a collector (Enterprise Edition)
- Specify the redundancy settings for a logging server (Enterprise Edition).
- Set up Store and Forward to cache and forward data if the connection to a collector is lost (Enterprise Edition).

Configuring a Collector Node

1. To add a collector, right-click the Node Setup and Redundancy icon and select **+ Collector**.
   Note: If you want to edit an existing collector, double-click the icon of the existing collector.
2. Enter the **name** for the Collector
3. Ensure the **Enabled** checkbox is checked.
4. Enter an optional **description**, if desired.
5. Specify information for the **Store and Forward** feature on the Store and Forward tab. This feature caches data if the connection to a collector is lost. When the connection to the collector is restored, the cache will be flushed, and the two (primary and secondary) databases will be automatically synchronized. Options are:
   - The **maximum storage size on disk** in megabytes
   - The **maximum storage size in memory** in megabytes
   - The **maximum number of packages** stored in memory
   - If you want the most recently collected data to be stored and forwarded before all other data, put a checkmark next to **Send Most Recent Data first**.

- Your **discard policy** (Discard oldest data first OR Discard newest data first)

6. Next, select one of the following in the **Properties** tab:
   - Select **In-Process Collector** if you have installed one collector that resides on the same server as the logger. Go to step 14 for your remaining options, then proceed to the next section, "Configuring the Logging Server" on page 3.17.
   - Select **Standalone Collector** if you have the Enterprise edition of Hyper Historian **and** one or more *separate* standalone collectors have been installed, then *follow the remaining steps, below the figure.*
7. From the **Protocol** drop-down list select the appropriate protocol. Which you choose depends on how the separate collector is configured to communicate with FrameWorX. Options include:
   a. HTTP Direct
   b. TCP Direct
   c. HTTP over FrameWorX
   d. TCP over FrameWorX
   e. HTTPS over FrameWorX
   f. WSHTTPS over FrameWorX
   g. Use Local FrameWorX as Mediator
8. Enter a name for the **Primary Node** or select one from the drop-down list. The URL field below it will be pre-filled from your primary node selection. (To modify the URL, see step 12.)
9. Now you have the option to create a backup node by putting a check mark next to **Enable Redundancy** in **Secondary Node**. The steps 10-12 assume you have proceeded with configuring a backup node.
10. Enter a **name** for the secondary node or select one from the drop-down list. The URL field below it will be pre-filled from your backup node selection. (To modify the URL, see step 12.)
11. Click the checkbox next to **Auto Fail-back** to switch from the secondary node to the primary node when the primary becomes active again.

12. Click the checkbox next to **Use advanced configuration** to allow further configuration. Once the box is checked, you can click on the **Advanced Configuration** button at the bottom of the window to open the Advanced Redundancy Configuration window, where you can modify the Primary Node URL and/or Secondary Node URL directly. Note that changes to this configuration may require equivalent changes in the nodes configuration. Click **OK** to proceed.
13. A heartbeat can be enabled for collectors to alert you to failed communication. To do so, click the checkbox **Enable Heartbeat** and select the data point that will record the result.
14. Compression can be enabled for both data and the configuration by selecting the compression type from the dropdown lists in the **Compression** section.
15. Click the **Apply** button to save the changes.

Configuring the Logging Server

1. To edit the Logging Server, double-click the icon of the existing Logging Server.
2. Enter the **name** for the Logging Server
3. Ensure the **Enabled** checkbox is checked
4. Enter an optional **description**, if desired.
5. Optionally, to make the server's historical data read-only, put a checkmark in the **Disable HDA Editing** checkbox. If you do this, you won't be able to edit any Historical data being logged on the server using *any* programmatic interfaces.
6. Now you have the option to click the checkmark next to **Redundancy** to enable it. *Steps 7-11 assume you have selected to enable **Redundancy**.*
7. Select your desired Protocol (HTTP or TCP) by using the drop-down list.
8. Enter a name for the **Primary Node** or use the drop-down list to select one. The URL field below will be pre-filled depending on your selected primary node. (To modify the URL, see step 11.)
9. Enter a name for the **Secondary Node** or use the drop-down list to select one. The URL field below will be pre-filled depending on your selected backup (secondary) node. (To modify the URL, see step 11.)

10. Click the checkbox next to **Auto Fail-back** to switch from the secondary node to the primary node when the primary becomes active again.
11. Click the checkbox next to **Use advanced configuration** to allow further configuration. Once the box is checked, you can click on the **Advanced Configuration** button at the bottom of the window to open the Advanced Redundancy Configuration window, where you can modify the Primary Node URL and/or Secondary Node URL directly. Note that changes to this configuration may require equivalent changes in the nodes configuration. Click **OK** to proceed.
12. A heartbeat can be enabled for collectors to alert you to failed communication. To do so, click the checkbox **Enable Heartbeat** and select the data point that will record the result.
13. Compression can be enabled for both data and the configuration by selecting the compression type from the dropdown lists in the **Compression** section.
14. Click the **Apply** button to save the changes.

3.17 Configuring System Settings

You will need to restart the Hyper Historian logger after making changes to the system settings. This can be done by clicking the traffic light icon in the top ribbon and waiting for it to turn red (indicating the logger has stopped) and then clicking it a second time to restart the logger.

Configuring License Mode

The Hyper Historian is available in two major editions, Standard Edition and Enterprise Edition. Both editions support the connectivity, data collection and logging, archiving, and data playback capabilities of the Hyper Historian. In addition to supporting these core capabilities, the Enterprise edition includes support for remote or standalone distributed data collection, redundancy (both at the collector level and the data logger/database level), store and forward capability, and optimization for multi-core and multi-processor systems.

The Enterprise Edition is optimized for performance in a distributed data collection environment where the data collection is performed on separate machines, not on the PC/workstation running the Logger. The Standard Edition, on the other hand, is optimized for a single PC / workstation system where the entire Hyper Historian is running on one machine.

The Hyper Historian Enterprise Edition users can run Hyper Historian Logger in Enterprise or Standard mode if the Hyper Historian is running on a single PC/workstation (that is, a non-redundant single workstation). Running the system in Standard mode provides better logging performance and the possibility of achieving high throughput rates on a single PC solution.

In the **System Settings**, listed under System Administration in the Project Explorer, Enterprise edition users can set the License Mode.

- Selecting the auto mode results in Hyper Historian using the mode version of Hyper Historian Logger and Collector that matches the configuration of the collectors (**InProc** if using local collectors, OPC UA version if using remote collectors). This is the default license mode for Enterprise edition users.
- Selecting the standard mode results in the Hyper Historian using the **InProc** version of the Hyper Historian Logger and Collector, which is optimized for single PC/workstation performance.
- Selecting the Enterprise mode results in the Hyper Historian using the OPC UA version of the Hyper Historian Logger and Collector, which is optimized for a distributed system, and one that supports redundancy, store-and-forward, and optimized performance on multi-CPU systems.

It is also important to set the **Disk Space Management** settings. With these settings, you are able to set:

- The amount of disk space remaining (in megabytes) before you receive a warning

- The amount of disk space remaining (in megabytes) before you receive an error message and the Data Logger stops logging.

Configuring Archive Settings

Use the System Settings for the overall configuration of the Hyper Historian Archive function. The Hyper Historian Archive function automatically detaches older data from the system and moves the detached data to a specified location (that is, a specified folder).

After archiving is enabled and the Hyper Historian has begun creating archived files, the archive files created by the Hyper Historian should be backed up to CD, DVD, tape, or some other *permanent* storage media for long term storage.

To open the Archive settings screen, expand **System Administration** in the Project Explorer, select **System Settings** and verify the Options tab is selected. Note the additional tab called **File Logger**. Here you can set up archival parameters for your file logger. Each is described separately on the pages that follow.

Archival for File Logger:

To archive data from a file logger, click the **File Logger** tab. Use the **Cache**, **Logger**, **Master Logger**, **Logger Data Store**, and **Master Logger Data Store** sections to fine tune your archiving requirements.

Using the Hyper Historian Archiving Management

Once the Hyper Historian's logged data is archived (detached from the system), the data is no longer available for playback on the trend display or available through the SQL Query interface.
However, previously archived data can easily be reattached to the system and again made viewable on trend displays and accessible via the SQL Query interface. This is done via the Hyper Historian Archiving Management screen.

To access the Archiving Management screen, double-click the Archiving Management Icon located under the System Administration Icon in the Project Explorer. Your Archiving Configuration should be pre-filled from the information added within the System Settings.

You will then be able to re-attach previously archived files by clicking the button and browsing to the folder containing the archive files to be reattached. You can multi-select files (using the Shift or Control keys).

Note: The following naming convention is used for the Archive files: <Logger Name>_<Start Date>_<Start Time>_<End Date>_<End Time> where the format for the Date is yyyymmdd and the format for the Time is hhmmss.

The re-attached archive files will be listed in the Attached Archive Files window. If you had selected **Generate Metadata for Archiving Files** in the System Settings, that metadata would appear in the window to the right.

4 ICONICS SOFTWARE LICENSING

4.1 Software and Hardware Keys

Hyper Historian licensing is handled by a *software key license registration system* that does not require a hardware protection key. However, ICONICS does offer an optional *hardware key* which you can purchase.

4.1.1 Software Licensing

The software key is a licensing key that resides on the hard drive of a computer. Each software key is used on a single, specific computer and is used only once. It is activated using a Site Key (license file) that is tied to the computer that is being licensed.

An activated license is required to use the software in full production mode. This license designates which products may be used, as well as the I/O point-count limit that controls the number of active data points (tags) that can be used by a system.

For important details about registering and activating software licenses for your Hyper Historian installations, refer to the **ICONICS .NET Licensing Readme.htm** file, which is available on your Hyper Historian installation DVD (and as a link from the disc's Info Center).

4.1.2 Hardware Key

The optional hardware key is a USB thumb drive (or flash drive) that you can move from system to system. Hyper Historian recognizes the hardware key on the system you have the key attached to. A hardware key is easier and is a more reliable way of moving a license from one machine to another than a software key.

Upon insertion of the USB key into an available USB port, the necessary drivers are automatically loaded. A green status light will illuminate upon successful connection.

Should the USB key be missing or unplugged during operation of Hyper Historian software, plug the USB key back in either within an hour of removal or upon system reboot; otherwise the hardware-based license will not be immediately recognized.

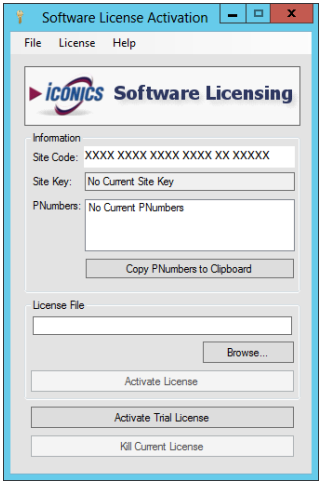
Should you require a replacement key, visit http://www.iconics.com/supportworx. New users must create an account through the ICONICS Web Licensing Utility in order to request replacement keys.

4.2 Licensing Utility

The Software Licensing Utility provides full authorization for use to any purchased Hyper Historian product and its available options.

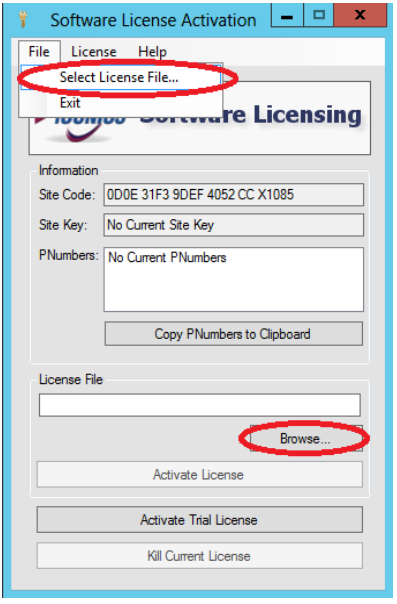
4.2.1 Running the Licensing Utility

To launch the License Utility from the Windows **Start** menu, select **Programs** > **ICONICS .NET Licensing** > **Licensing Utility**.



4.2.2 License File

Once you have opened the Software Licensing Utility, you can browse for the Site Key (License File) itself. Either click on the **Browse…** button in the License File section of the window **OR** click on **File** in the top menu, then **Select License File….**

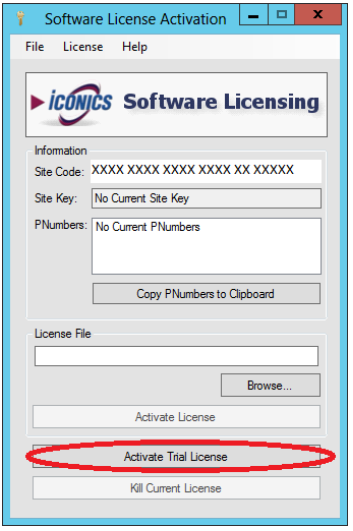


This brings up the Windows Explorer so that you may browse for the License File itself. Once you have located the file, double-click it or click **Open** to proceed.

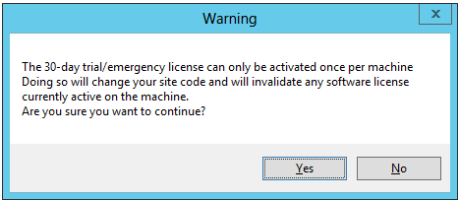
4.2.3 Activating the 30-day Trial/Emergency License

Within the Licensing Utility (Software License Activation for .NET) dialog box, you can click on the **Activate Trial License** box to initiate a 30-day trial/emergency license.

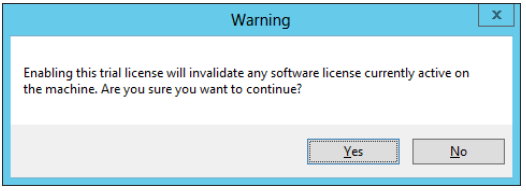
NOTE: This license can be activated only once per machine.



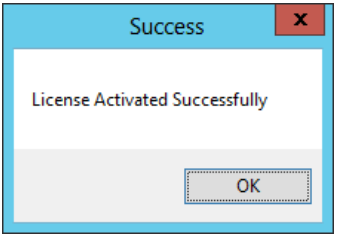
You will then see a warning about proceeding with activating the 30-day trial/emergency license. Click **Yes**, should you wish to proceed.

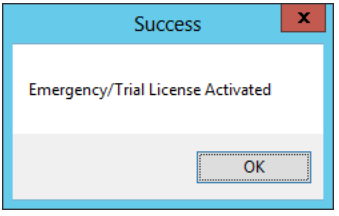


You will then see an additional warning confirming that you understand that enabling the trial license will invalidate any other software license that is currently active on the machine. Click **Yes** should you wish to proceed.



Once the 30-day trial/emergency license has been enabled, you will see the following messages:





The PC will then be authorized to run for a one-time only, 30-day backup period. The PC can be fully authorized at any time during or at the conclusion of this temporary backup period. Clicking **No** in the initial windows returns you to the Licensing Utility (Software License Activation for .NET) dialog box and preserves the existing license.

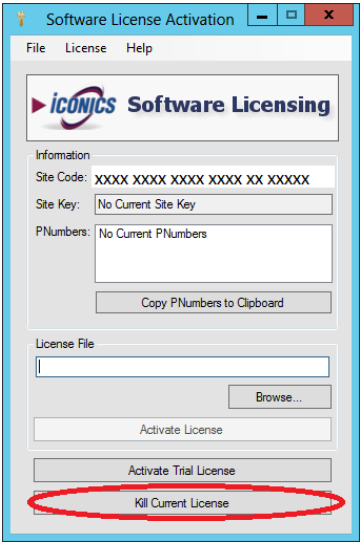
Note: Temporary backup license authorization is intended for urgent backup situations only. Clicking OK invalidates the existing license and activates a temporary backup authorization, permanently overwriting any existing license. Thus, please use caution when activating a temporary backup license authorization.

4.2.4 Killing a Software Key License

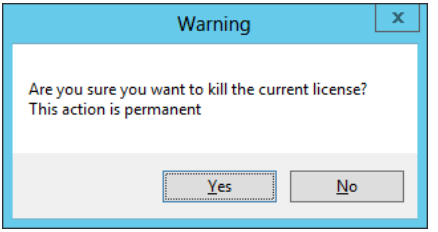
Killing a software key license deletes it and removes the current software license from the machine.

To Kill or Delete the Existing Software License:

1. Select **Kill Current License** within the Licensing Utility (Software License Activation for .NET) dialog box. Using this option, you can remove the current software license from the current machine.



A warning message appears on the screen as shown in the figure below.



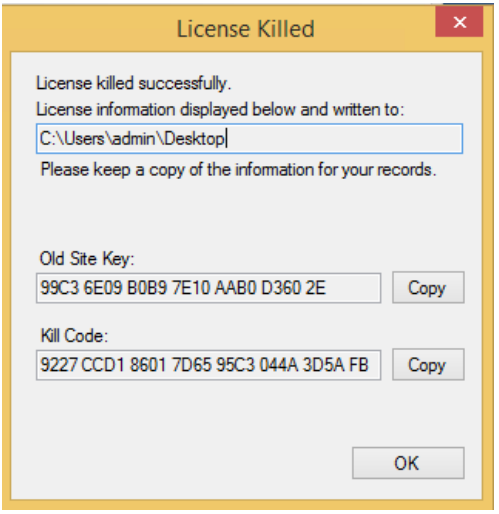
IMPORTANT: If you kill your license, you need to get a new license from ICONICS to restart your Hyper Historian product.

2. Click **Yes** to continue, or click **No** to exit. Clicking **Yes** displays one of the following warning messages.

   If you are killing a *trial* or *emergency* license, once you click **Yes** you are done.

   Note: A trial or emergency license cannot be credited back to the web-based License Generator using the Kill Code.

   If you are killing a *permanent, registered* license, after you click **Yes**, the following warning message appears. Notice that the message lists the old Site Key, and a Kill Code. It also lists a .TXT file that has been written to the PC's desktop; the file name begins with "KillCode". This file contains the old Site Key and Kill Code that are listed in the message.



3. Click **Yes** to copy the Kill Code to the Windows Clipboard so that you can paste it elsewhere, such as in an email to ICONICS Support or on the ICONICS Web Licensing Utility. If you don't need to copy the Kill Code at this time, click **No**.

4. Look on the desktop for the KillCode*.TXT file. **Keep this file, and copy it to a safe location!** You will have to use the information it contains to confirm that you have killed your license (via either the ICONICS Order Entry Department or the ICONICS Web Licensing Utility).

5. Proceed with the online steps described in **4.4.3.1** “Killing a License via the ICONICS Web Licensing Utility”

Note: To reinstate a permanent license that you killed, you will need to provide the KillCode*.TXT file to ICONICS.

Note: If you uninstall the Software License Utility, the KillCode*.TXT file will be deleted. For this reason, make sure you copy the KillCode*.TXT file to a safe location or be sure to note or print its content before uninstalling the Software License Utility on the PC. [*** = Site Key that was killed.**]

4.3 License Viewer

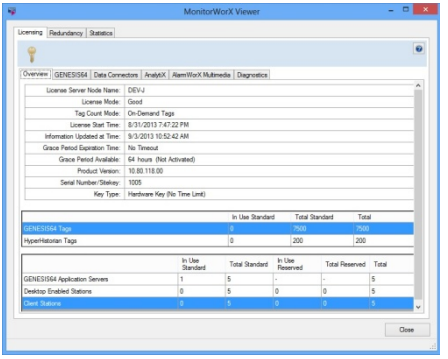
When you purchase licenses, the licenses are measured in a point count that determines the number of OPC tags that you can use in your application. One point count is used for most Hyper Historian applications. There are two different modes for using tags in point counts:

- On-demand mode. A system for dynamically using licensed points, and then reusing the points as needed. The count at any instance includes only active points in use.
- Configure mode. A system in which all points are statically configured in a static central location, inside the Unified Data Manager. All configured points are counted against the point count.

The two mode types are not interchangeable and require you to buy a new license to upgrade your existing license status.

At any time, you can use the License Viewer to review the license status of ICONICS products installed on that computer. You can access the License Viewer by:

- From the Windows desktop: click **Start** > **All Programs** > **ICONICS Licensing** > **ICONICS .NET Licensing > MonitorWorX Viewer**.
- From the Workbench: from the **Tools** ribbon click the **Licensing** button. Or from the **File** menu, select **Tools**, and then **Licensing**. The License Viewer displays as shown in the following image.



The tab that displays initially is the **Overview** tab, where you can see general information about the license for the server that the node points to. You can view license information for **GENESIS64, AnalytiX, Data Connectors**, **BizViz products (under the AnalytiX tab)**, and **AlarmWorX Multimedia** product features by using the tabs for those products. To locate the nodes where individual product features are consuming the server's license counts, use the **Diagnostics** tab.

4.4 Web Licensing

You can use the ICONICS Web Licensing Utility to generate a new license, kill a license and transfer a license. One function of the ICONICS Web Licensing Utility is to use it to upgrade your license.

Supported operating systems for using the ICONICS Web Licensing Utility to upgrade your license include Windows 8 x64 (Professional or Enterprise Edition), Windows 7 x64 (Professional, Ultimate, or Enterprise Edition), Windows Server 2008 R2 x64, Windows Vista x64 SP2 (Business, Ultimate, or Enterprise Edition), Windows Server 2008 x64 or Windows Server 2003 x64. Using the utility will require Internet access and a web browser (e.g. Internet Explorer 6.0 and up).

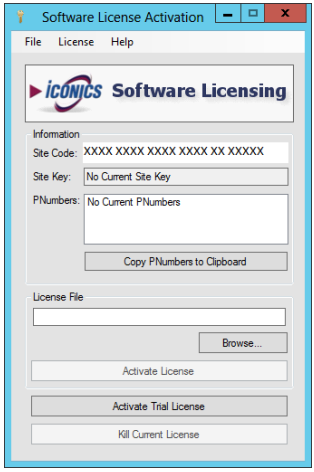
4.4.1 Acquiring a New Software License

Users of ICONICS software can use the ICONICS Web Licensing Utility to acquire a new software key license.

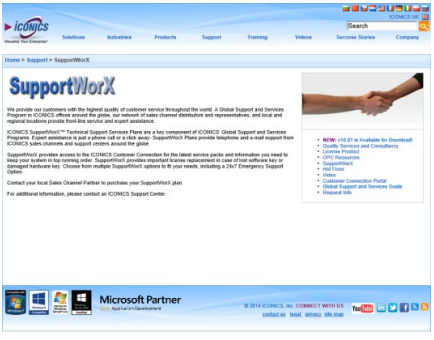
Issuing a New Software License

1. On the machine where you want the Hyper Historian license to reside, open the License Utility by going to **Start** -> **Programs** -> **ICONICS Licensing** -> **ICONICS .NET Licensing** -> **Licensing Utility**. This should open the Software License Activation for .NET window.

2. You will see a dialog come up with a Site Code and “No Current Site Key” within the Site Key text box. Leave this window open.



3. Go to http://www.iconics.com/supportworx and launch the Web Licensing Utility Site by clicking on the “License Product” link on the right side of the page.



Or, from ICONICS website (http://www.iconics.com), select “License Your Product” from the bottom-right Customer Connection area.

4. The main page of the Web Licensing Utility will load. Click on the “Software” button to access the Software License Options.

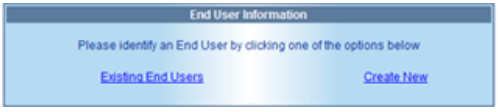
5. You will be required to log in to access the Software License Options. Enter your email address and password and click on the “LOGIN” button. If you do not yet have an account, you can create one by clicking on the “Create New Account” link near the bottom of the page.

6. Once you have logged into the website, click on the “New License” link in the top navigation bar.

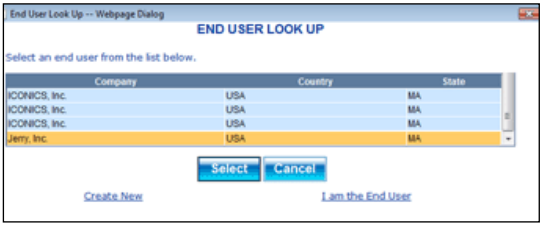
7. Enter your Product Registration Numbers and Customer Keys for the products to license, then click “Next”.

   NOTE: Your Product Registration Number and Customer Key are usually inside the DVD package that ICONICS sent to you.

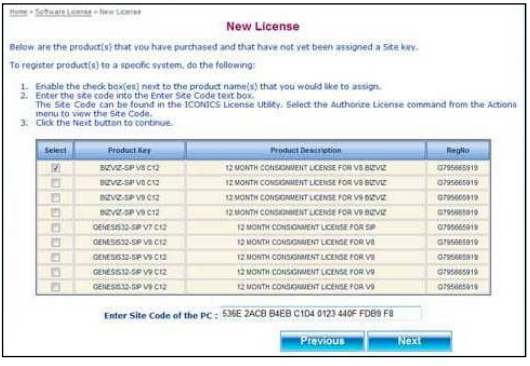
8. In the next screen, you will be requested to identify the end user for whom the license is being issued. You can look up a list of users that have been previously entered by clicking on the “Existing End Users” link or can enter a new one by clicking on the “Create New” link.



9. Clicking the Existing End Users link will open a new window with a list of previously entered end users (either entered by you or tied to the product registration numbers entered in the previous screen). Select an end user from the list and click “Select” or double-click the selected end user.
If you, yourself, are the end user and you are not listed in the grid, you can click on the “I am the End User” link to enter your data as the new end user. After identifying the end user, click on “Next”.

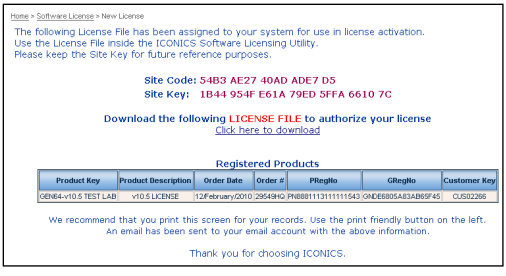


10. In the next screen, you will see a list of the products that are available for you to license. Check all the products that you would like to license. Copy the Site Code from the license utility of the destination machine and paste it into the Site Code box of the current web page, then click on “Next”.



11. Review the license information before proceeding. Click on “Generate Key” to issue the new Site Key.

12. The next page will show you a summary of what will be your license, as well as your Site Key and License File.


Home > Software License > New License

The following License File has been assigned to your system for use in license activation.
Use the License File inside the ICONICS Software Licensing Utility.
Please keep the Site Key for future reference purposes.

Site Code: 54B3 AE27 40AD ADE7 D5
Site Key: 1B44 954F E61A 79ED 5FFA 6610 7C

Download the following LICENSE FILE to authorize your license
Click here to download

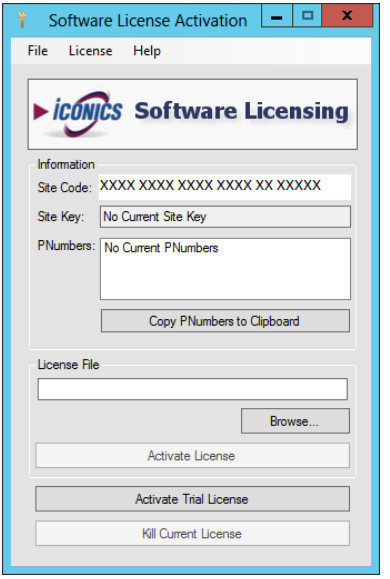
Registered Products

Product Key	Product Description	Order Date	Order #	PRegHo	GRegHo	Customer Key
GEN64-v10.5 TEST LAB	v10.5 LICENSE	12/February/2010	29549HQ	PN888113111111543	GNDE6805A83AB65F45	CUS02266

We recommend that you print this screen for your records. Use the print friendly button on the left.
An email has been sent to your email account with the above information.

Thank you for choosing ICONICS.

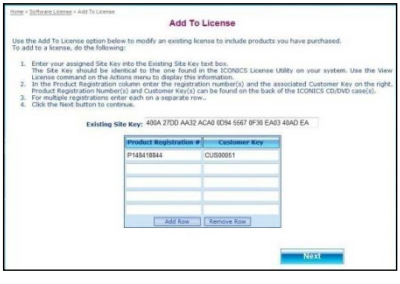
13. Download the license file (*.glic) by clicking on the link. You will need this file to license the machine. **NOTE:** If you misplace the file after receiving it, you can use the View License link with your Product Registration Number to download it again.
14. In the Software License Activation Utility, click on the “Browse” button and look for the license file that you downloaded from ICONICS website.
15. Once you have selected the file and the License File textbox shows the file path, click on the “Activate License” button.
16. You should then receive a popup message indicating the status of the license activation. You can click on “OK” to close the dialog.
17. The Software License Activation Utility should now show the current license information, similar to the following image.



18. Notice that the Site Code may change, as expected, but the Site Key should be the same one you saw on the website.

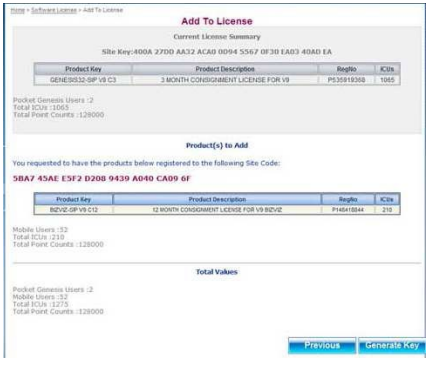
4.4.2 Adding to an Existing Software License

1. Go to http://www.iconics.com/supportworx and launch the Web Licensing Utility Site by clicking on the “License Product” link on the right side of the page.
2. Once you have logged into the website and accessed the Software License main page, click on the “Add to License” link in the top navigation bar.
3. Enter your Existing Site Key, Product Registration Numbers and Customer Keys, then click “Next”.



4. In the next screen, you will see a summary of the current license and a list of products that are available for you to add to the existing license. Check all the products that you would like to license. Copy the Site Code from the License Utility of the destination machine and paste it into the Site Code text box of the current web page, then click “Next”.

5. Review the license information before proceeding. Select “Generate Key” as shown in the following image.



6. The next screen will display the new Site Key and the link to your license file. Follow steps 13 to 18 from **4.4.1.1** “Issuing a New Software License” to complete the licensing process.

4.4.3 Upgrading a Software License Key

There are four basic steps when it comes to upgrading a license via the Web Licensing Utility:

- Step 1: Kill the older version license and credit it on our website
- Step 2: Upgrade the license on our website
- Step 3: Uninstall the older version of software and install the newer version
- Step 4: License the newer version

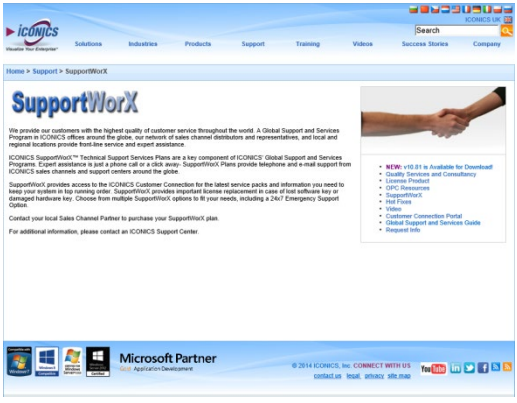
The order in which you do Step 2 and Step 3 does not matter.

Killing a License via the ICONICS Web Licensing Utility

See Section **4.2.4** “Killing a Software Key License” for the initial steps on how to kill a license within the Licensing Utility (Software License Activation for .NET) provided on the Hyper Historian DVD. Be sure to take note of the Site Key and Kill Confirmation Code. This information is necessary to put the license back on the ICONICS website. NOTE: This information is also in the KillCode*.TXT file.
[*** = Site Key that was killed.**]

Once you have the Kill Code, follow these additional steps:

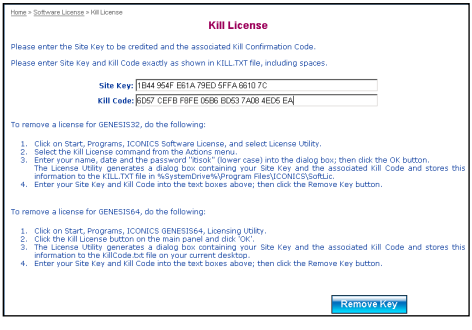
1. Go to http://www.iconics.com/supportworx and launch the Web Licensing Utility Site by clicking on the “License Product” link on the right side of the page.



2. The main page of the Web Licensing Utility will load. Click on the “Software” button to access the Software License Options.

3. You will be required to log in to access the Software License Options. Enter your email address and password and click on the “LOGIN” button. If you do not yet have an account, you can create one by clicking on the “Create New Account” link near the bottom of the page.

4. Click on the “Kill License” link in the top navigation bar.
5. Copy the Site Key from the KillCode*.TXT file into the Site Key field on the web page, then copy the Kill Confirmation Code into the Kill Code field on the web page. Next, click on the “Remove Key” button on the web page.

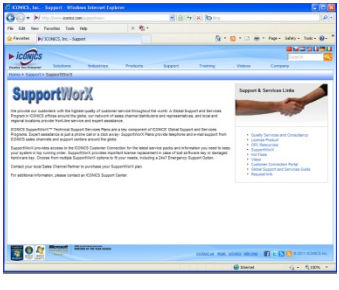


6. You will get a message confirming that the Site Key has been successfully deleted as shown in the image below. The products associated with the deleted Site Key will now be available to be re-licensed.

Upgrading the License on ICONICS Website

See Section **4.2.4** “Killing a Software Key License” for the initial steps on how to kill a license within the Licensing Utility (Software License Activation for .NET) provided on the Hyper Historian DVD. Be sure to take note of the Site Key and Kill Confirmation Code. This information is necessary to put the license back on the ICONICS website. NOTE: This information is also in the KillCode*.TXT file.
[*** = Site Key that was killed.**]

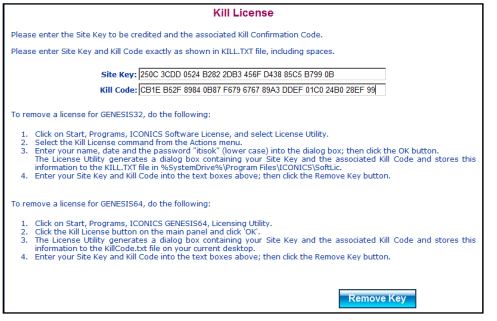
1. After you have copied your Site Key and Kill Confirmation Code in the previous step (either physically or electronically), you can now visit http://www.iconics.com/supportworx.



2. Next, click on the “License Product” link. This opens a new Web page, as shown below.

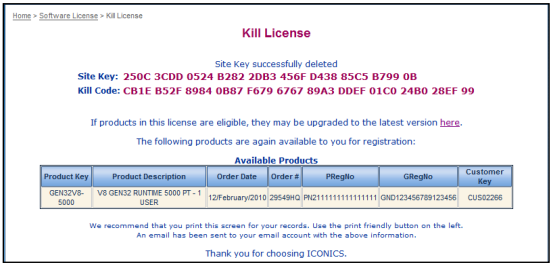
3. Click on the “Software” button to proceed. You will then be required to enter your email address and password for the site, as shown below. If you do not already have a login for this page, click on the “Create New Account” link near the bottom of the page.

4. Once you have logged in, click on the “Kill License” link in the top navigation bar.
5. Next, fill in your Site Key and Kill Code information that you copied while killing your previous license (see 4.2.4 “Killing a Software Key License”).



6. Once you kill the license on ICONICS' website, you will receive an email containing the following information:
   - Site Key
   - Kill Code
   - Product for which you have killed the license

   The web page itself should now look similar to the figure below.



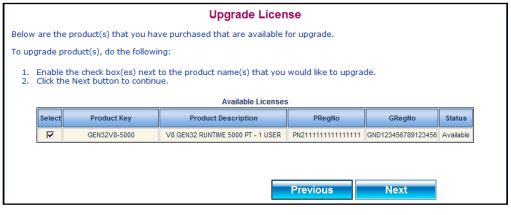
7. At this point, you have completed killing the license. Notice that in the final "Kill License" page, as shown above, it states that if the license is eligible, it can be upgraded to the latest version and it provides a link for availability.

Checking License Upgrade Availability

The easiest way to check if your license is available for an upgrade is by clicking the link on the page immediately after you kill the license. Clicking the link brings you to the Upgrade License page. You can also get to this page by clicking on the “Upgrade License” link in the tree control (third item).

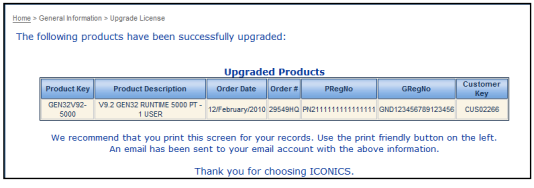
Follow these steps to upgrade your license.

1. On the Upgrade License page, fill in your Product Registration Number and Customer Key. This is the same information you received in the web page and in your email after you have killed the license on our website.
2. Click on “Next” when you have filled in the necessary information.
3. If the license is available for an upgrade, you will see the available license on the page.



4. Notice that the Product Description here shows a different product with an earlier version license (Version 8). Yours should reflect the license you have for your product. Check the available product that you would like to upgrade and click on “Next”.
5. The next page is a confirmation page. Check that the information shown is correct and click on the “Upgrade” button to proceed.

6. On the new page that loads next, you can see a list of upgraded products. Notice that the Product Description shows a license for a later version product (Version 9.2) instead of the earlier one (Version 8).


Home > General Information > Upgrade License

The following products have been successfully upgraded:

Upgraded Products

Product Key	Product Description	Order Date	Order #	PRegNo	GRegNo	Customer Key
GEN32V92-5000	V9.2 GEN32 RUNTME 5000 PT - 1 USER	12/February/2010	29549HQ	PN2111111111111111	GND123456789123456	CUS02266

We recommend that you print this screen for your records. Use the print friendly button on the left.
An email has been sent to your email account with the above information.

Thank you for choosing ICONICS.

7. You should also receive an email with the license upgrade information.

4.4.4 Upgrading a Hardware Key License

Upgrading a hardware key license is similar to upgrading the software key license. You would follow the exact same procedure as upgrading a software license. In the case of a Hardware key License though, you will need the USB dongle in order to kill the license from it and put the new one onto the key.

4.4.5 Licensing the New Version

Now that you have upgraded the license, you can follow the regular procedure to license your machine with the new version. When it asks you for the Product Registration Number and the Customer Key, you can provide the same one. This information was sent to you in the last step of upgrading your license via email. If you need more information on how to license the machine with the upgraded license, please consult our application notes titled *Licensing – Using the ICONICS Web License Utility for Software Key Licenses* and *Licensing – Using the ICONICS Web License Utility for Hardware Key Licenses,* as it pertains to your individual situation. These Application Notes and more can be found via the Info Center on the Hyper Historian DVD.

4.5 Cloud Licensing

4.5.1 How Cloud Licensing Works

ICONICS Cloud Licensing is a means of licensing ICONICS products that is specifically designed for applications running on public cloud, private cloud, or virtualized environments. Rather than maintaining the license locally on the machine, licenses are hosted by ICONICS on a publicly-accessible data center.

During normal operations of the licensed machine, the first action it takes when starting up is to request the license information according to its License Pool ID. This request requires the machine to have access to the internet in order to request the information from the ICONICS cloud licensing server.

Once the license information has been successfully retrieved, the machine continues to operate using the licensing information retrieved from the web. The machine then periodically checks with the ICONICS Cloud Licensing server in order to validate the license. If it cannot validate the license for an extended period of time, the machine license will fail.

4.5.2 Issuing a New Cloud License

Follow these instructions to activate a license on a machine that currently has no license on it, or has a license on it that you want to overwrite.

If your machine already has a license on it and you are looking to add another license to it, see the next section entitled, “Adding to an Existing Cloud License”.

1. Go to http://www.iconics.com/support and click the “License Your Product” link on the right.
2. In the new page that appears, select “Cloud” and log in with your username and password.

Note: If you do not have a username and password pair, you can register for one using the “Create New Account” link at the bottom of the window. If you have a username and password but have forgotten them, you can click on the “Forgot Password” link at the bottom of the window.

3. Once you have logged into the website, click on the “New License” link at the top.
4. Enter your Product Registration Number(s) and Customer Key(s) for the products.

Note: Your Product Registration Number(s) and Customer Key(s) are usually inside the DVD tin package that ICONICS sent when the product was purchased.

5. Click the “Next” button once you have entered all of your Product Registration Number(s).
6. Choose an existing end user or enter new end user information. Click “Next” when done.

Note: The existing end user dialog may take a few moments to appear. Please be patient.

7. On the next screen, you see a list of the products that are available for you to license. Check all the products that you would like to license on this machine. Click “Next”.

8. This page shows you a summary of what is in your license. Check to make sure everything is correct, then click on the “Generate Key” button. A page similar to the image below appears.

New License

The following License Pool has been assigned to your system for use in license activation.
Use the License Pool inside ICONICS Platform Services Configuration.
Please keep the License Pool for future reference purposes.

License Pool: A64F9EF1-D289-4386-A34D-637CD4857ADD

Registered Products

Product Key	Product Description	Order Date	Order #	P Number	G Number	Customer Key	32-bit VersionNum	64-bit VersionNum
IGO360-SIP 30DAY	1 MONTH LICENSE FOR IGO360-SIP	28/Oct/2014	55351HQ	PN1264C8E85EAECF41		CUS02266	9.35	10.65

We recommend that you print this screen for your records. Use the print friendly button on the left.
An email has been sent to your email account with the above information.

Thank you for choosing ICONICS.

4.5.3 Activating the License

1. Open the “Platform Services Configuration” application by going to **Start** > **Programs** > **ICONICS** > **Tools** > **Platform Services Configuration**.
2. Select the “License” tab.
3. Select the radio button for “Cloud License” and enter the “License Pool” code that was provided by the Web License Utility. You can leave the “Password” blank.
4. Restart the FrameWorX64 Service.

4.5.4 Adding an Existing Cloud License

1. Go to http://www.iconics.com/support and click the “License Product” link on the right.
2. In the new page that appears, select **Cloud** and log in with your user name and password.
3. Once you have logged into the website, click on the “Add to License” link at the top.

Note: It is very important to pick “Add to License” and not “New License”. Picking “New License” overwrites any existing license already activated on this machine. Make sure to pick “Add to License” if you are adding products to a machine that already has a license on it.

4. Enter your existing License Pool ID and the Product Registration Number(s), and Customer Key(s) for the new products.

Note: Your Product Registration Number(s) and Customer Key(s) are usually inside the DVD tin package that ICONICS sent when the product was purchased.

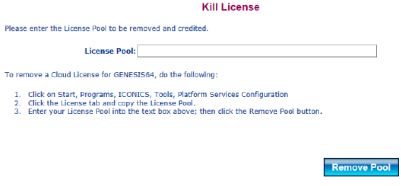
5. Click the “Next” button once you have entered all of your Product Registration Number(s).
6. Choose an existing end user or enter new end user information.
   Click “Next” when done.

Note: The existing end user dialog may take a few moments to appear. Please be patient.

7. In the next screen, you see a list of the products that are available for you to license. Check all the products that you would like to license on this machine.
   Click “Next”.
8. This page shows you a summary of what is in your license. Check to make sure everything is correct, then click on the “Generate Key” button.

4.5.5 Killing a Cloud License

1. Go to http://www.iconics.com/support and click the “License Product” link on the right. Select the “License” tab.
2. In the new page that comes up, select “Cloud” and log in with your username and password.
3. Once you have logged into the website, click on the “Kill License” link at the top. A page similar to the figure below appears.



4. Enter your License Pool ID into the prompt. Click “Remove Pool”.
5. A message confirming that the license has been successfully removed appears. You will also receive an email with the killed license information. The products associated with this License Pool are now safely parked on the website and available to be re-licensed at any time.

4.6 Demo Mode

Without a valid license installed in your PC, it is still possible to use Hyper Historian in Runtime mode. The software will check for a valid hardware or software license key on initialization. If none is found, GENESIS64 runs in Demo Mode, which limits you to:

- Twelve hours of runtime
- Only 64 OPC tag connections (points) can be updated

Running Hyper Historian longer than the 12-hour limit generates a message stating that the demo time has been exceeded. You must then exit Hyper Historian and reboot the PC. On restarting Hyper Historian, you will get another 12-hour block of time in which to run. If there are more than 64 tags on a particular screen, gray keys (or whatever is configured as the Point Failure character) will appear in place of the actual I/O data.

5 HELP AND TECHNICAL SUPPORT

5.1 Help Documentation

ICONICS software provides online help with descriptions and explanations of each application. Help is available throughout ICONICS Suite. You can access help in the following ways:

- Click the Help icon in the Workbench. This opens the help file for that application. To search for a topic in the help file, click the Index tab or the Search tab. Type or select the term you want to find, and then click the topic you want to read.
- Press the **F1** key to display context-sensitive help.
- Click the **Help** button in any dialog box to display context-sensitive help for that dialog box.
- Move the mouse pointer over an icon and pause for a moment to display pop-up ToolTips for quick help.
- From the Windows **Start** menu, select **All Programs** > **ICONICS Help** > **Help**

5.2 Product Videos

A new feature of the Customer Connection Portal is the in-depth training videos highlighting many ICONICS products. These videos help users configure their systems using best practices. Starting with a Quick Start series introducing each module in GENESIS64, these videos provide brief overviews and demonstrations of how to use ICONICS products. Send us your suggestion for topics to cover!

5.3 Training Classes

Training classes are held regularly at the ICONICS training facility in Foxborough, Massachusetts. To reserve seats in training courses and to view the current ICONICS training schedule, go to http://www.iconics.com/Training.aspx. If you have any questions about ICONICS training, please contact our training coordinator at 508-543-8600.

5.4 Technical Support

ICONICS customers may obtain technical support in several different ways. First-line Support is through your local ICONICS representative or distributor. You may also contact ICONICS' Support Engineers directly by phone, email or the Customer Connection Portal (https://getconnected.iconics.com).

For complete information about Global Technical Support, please see the Global Support and Services User Guide at http://www.iconics.com/supportworx.

5.4.1 Global Support and Services

ICONICS is proud to provide our customers with the highest quality customer service. Our Global Support and Services programs are supported by ICONICS offices around the globe and our network of sales channel distributors and representatives, with local and regional locations for front-line service and expert assistance. Programs include the **SupportWorX™** Technical Support Services subscription program for continuous technical support; **Quality Professional Services** for expert system architecture design assistance, training and start-up assistance; a **24 x 7 Emergency Support Option** plan; and **Training and Certification** programs for ICONICS users, systems integrators and sales channels.

For complete information about SupportWorX service plans and technical support, please see the Global Support and Services User Guide at: http://www.iconics.com/supportworx.

5.4.2 Customer Connection Portal

Get connected with ICONICS by visiting the Customer Connection Portal for general support, product downloads, product updates, customer collaboration and product tips from ICONICS' engineers and support team. The Customer Connection Portal features Support Solutions, a Support Bulletin, product videos, app notes, and whitepapers. The Support Solutions section addresses essential questions through the FAQ, Licensing, and a Global Search Engine, enabling users to find answers quickly and easily.

The Support Bulletin lists your support cases with real-time status updates along with popular knowledgebase articles and the most active forum threads. If users are current on their SupportWorX software maintenance plan, they are entitled to free upgrades. Download the latest product updates and new product releases from the Customer Connection Portal or sign up for the Beta program to try select features before they are officially released

5.4.3 Telephone Support

ICONICS support centers are open Monday through Friday, year round, except for local holidays and ICONICS holidays. Support handles calls on a first-come, first-served basis during the business hours below.

Americas (United States): 1-508-543-8600	8:00 AM – 6:00 PM Eastern Standard Time
Europe (Czech Republic): + 420-377-183-420	9:00 AM – 5:00 PM European Central Time
Asia Pacific (Australia): + 61-2-9605 1333	9:00 AM – 5:00 PM Australian Eastern Time

Please have the following available when you call:

- Your SupportWorX Plan Number.
- A PC available for tests and diagnostics.
- A clear understanding about the issue.
- The version of your OS and the ICONICS product(s).
- OPC server or relevant third-party software info.

Note: Go to https://getconnected.iconics.com/ICONICS/Support/GetSupport.aspx to contact our Technical Support department.

Email Support

The ICONICS support center email addresses are:

- **North America:** Support@ICONICS.com
- **Europe:** EuropeSupport@ICONICS.com
- **Pacific Rim:** PacificRimSupport@ICONICS.com

Please include your SupportWorX Plan Number when sending your message. Email requests will be answered on a first-come, first-served basis typically the same day.

NOTES

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Global Support Offices

Americas

+1 508 543 8600

support@iconics.com

Asia Pacific

+61 2 9605 1333

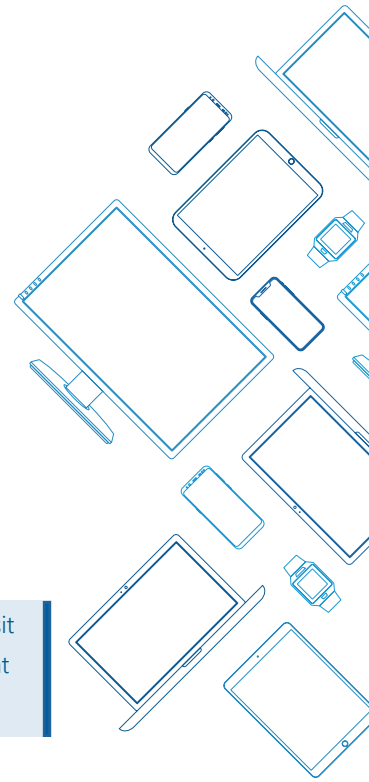
pacificrimsupport@iconics.com

Europe

+420 377 183 420 (Czech Republic)

+49 2241 16 508 0 (Germany)

europesupport@iconics.com



To open a support case, please visit our Customer Connection Portal at getconnected.iconics.com.

For more, visit www.iconics.com

A Group Company of Mitsubishi Electric